29 August 2019



Mr. Allan Ota Oceanographer Water Division (WTR-2-4) U.S. EPA Region 9 75 Hawthorne Street San Francisco, CA 94105

# Subject: Application for Ocean Dumping Permit for Starkist Samoa Co., American Samoa

Dear Mr. Ota,

Pursuant to Section 102 of the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 (33 U.S.C. 1412), Starkist Samoa Co. ("Starkist") submits its application for an ocean dumping permit in accordance with the requirements presented in CFR §221.1. Supporting materials to this application are provided as attachments.

## (a) Name and address of applicant;

Starkist Samoa Co., PO Box 368, Pago Pago, American Samoa 96799

(b) Name of the person or firm transporting the material for dumping, the name of the person(s) or firm(s) producing or processing all materials to be transported for dumping, and the name or other identification, and usual location, of the conveyance to be used in the transportation and dumping of the material to be dumped, including information on the transporting vessel's communications and navigation equipment;

Name of Producer: Starkist Samoa Co.

Name of Transporter: (Proposed) Aquatic Blue Environmental, PO Box 1861, Pago Pago, American Samoa, 96799.

Starkist proposes to contract with Aquatic Blue Environmental to operate an ocean dumping vessel. Specifications for this vessel are generally described within this application and in Attachment 1.

Aquatic Blue's vessel Master Captain will have experience captaining vessels performing open ocean operations and be a highly skilled vessel mechanic, proficient in fixing electrical systems, navigation systems, and issues with engines. The captain will be certified in operating vessels in both open ocean and near shore conditions. Aquatic Blue's Chief Engineer for the Starkist ocean dumping vessel will be an experienced mechanic, including experience with managing crew members and designing, maintaining, and monitoring pump systems.

P.O. Box 368

Pago Pago, AS 96799



<u>Transporter Vessel Communications and Navigation Equipment</u>: The transporting vessel, (name is to be determined) is equipped with a GPS receiver enabled with the Wide Area Augmentation System (WAAS) for horizontal position accuracy of +/-10 feet. The GPS receiver provides speed, course and the time and date information received from the satellite signals. The tracking unit is fitted with calibrated current sensors on up to two pumps to detect changes in pump amperage signifying use and is fitted with a flow meter to measure and record the flow rate at the point of discharge. The vessel is equipped with two VHF marine radios, radar, and one Single Sideband marine radios.

Starkist has contracted with Advanced Dredging & Industrial Solutions (ADISS, Inc.) to provide a vessel tracking and e-logging system to comply with the vessel monitoring requirements set forth by United States Environmental Protection Agency (USEPA) Region 9 for approval to dispose of fish waste within the USEPA designated American Samoa offshore disposal site. ADISS specializes in monitoring dredging projects and has provided tracking services to commercial dredging companies since 1997. About 800 monitoring projects have been completed, documenting more than 250,000 loads of dredged material to offshore and upland placement sites.

To accomplish the vessel monitoring requirements, a "Black Box" data logger configured and wired to receive and record vessel position, pump status and discharge flow rate information will be installed. The data logger will be housed in a watertight enclosure along with a back-up battery, power supply, Wi-Fi network adaptor and amber alert LED. The system will be powered by 110VAC supplied by the vessel.

Flow meter data will be interrogated by the logger software to confirm flow rates are within acceptable seasonal tolerances. If seasonal rate thresholds are exceeded, the system will provide a visual alert by flashing the amber alert LED until rates fall below the threshold limits. Control of the flow rate is discussed in Section g.

The data logger will be programmed to acquire position and sample the sensors at two different intervals. While inside a pre-determined geo-fence surrounding the designated disposal area, the system will log data at a 12-second rate. While outside the geo-fence and away from the disposal area, the system will log at a 5-minute rate. The "Black Box" logging system on the vessel will store and report the following data points at the designated intervals:

- GMT Date/Time (converted to Local when imported)
- Latitude/Longitude
- Speed
- Course
- System Voltage
- Pump Amperage
- Flow Rate (when discharging)

The position and sensor data will be logged and stored in the onboard data logging system. When possible, the logged data will be transmitted to a Fish Waste Disposal (FWD) website (created and operated by ADISS for Starkist) via a connection between the onboard Wi-Fi system and the island cellular data network (subject to communications connectivity with the mainland). This connection may be possible between the vessel and the island-based cellular data network during ocean dumping trips; however, the practical reach



of the cellular phone coverage system will need to be confirmed. At a minimum, the transfer of data to the FWD website is expected to occur as the vessel returns to Pago Pago Harbor (the Harbor) and the vessel's Wi-Fi returns to within coverage of the island data network system. In addition to the "Black Box" data logger, the vessel will also be equipped with an e-Logging laptop/netbook that ADISS will train the vessel crew to operate. This laptop/netbook will provide the crew with a software interface to enter and submit their daily trip logs.

In addition to the "Black Box" data logger, the vessel Captain/crew will maintain the laptop/netbook and enter trip specific details not recorded by the data logger including:

- Notification time/date with ASEPA/CGLO before each trip
- Onshore loading start/end times
- Volume loaded (in gallons)
- Wind direction (including every 30 minutes during discharge)
- Swell
- Dump site center conditions (coordinates, wind direction and observed surface water direction)
- Current direction (at center, end of discharge)
- Discharge pattern
- Presence of plume
- Time and position of any floating material
- Unusual occurrences
- Deviations from normal disposal pattern (with rationale for the deviation)

The data logging software will be capable of interfacing with the incoming GPS data to auto-populate several form fields to simplify data entry (i.e., discharge rate, total run time, average speed during discharge). The vessel Wi-Fi network will transmit the required vessel trip logs from the laptop/netbook to the FWD website via the same data connection as outlined above.

As a back up to the data upload system when Wi-Fi network coverage is not available, the software will be programmed to save and store logged and vessel data to a flash drive when inserted into the netbook/laptop. Once saved to the flash drive, the Captain/crew member can download and email the daily data files directly to the ADISS server when they return to the island, subject to accessible data connections between the island communication and the mainland. Once received by ADISS, the files will undergo a data validation Quality Assurance (QA) process. Upon completion of the QA process, the data will be made available on the website for viewing by authorized external parties on a biweekly basis. The FWD website will operate continuously in support of the vessel operations and will be monitored and supported by ADISS's team of Information Technology (IT) specialists.

The FWD website will host aerial and map views that will show shorelines as well as the designated EPA disposal site boundary. The website will also include other features, including the ability to display cursor coordinates and distance measurements from viewer selected map locations. Additionally, the website will provide access to the "trip plots" on a biweekly basis that will display the vessels geographical data (i.e., vessel navigational plot showing its course during discharge) and sensor status relative to the permitted



disposal site. This data will clearly show where disposal operations occurred by showing position and corresponding pump and flow status.

# (c) Adequate physical and chemical description of material to be dumped, including results of tests necessary to apply the Criteria, and the number, size, and physical configuration of any containers to be dumped;

Fish processing waste from the dissolved air flotation (DAF) sludge, press liquor/water from the fishmeal sump, and pre-cooker wastewater as authorized in 40 CFR 228.15(m)(1)(vi).

Physical and chemical data characterizing the material to be dumped is provided as Attachment 2. Sampling of the three wastewater streams was conducted on five separate days between June 20 and 27, 2019 as outlined in the Ocean Disposal Waste Stream Characterization Sampling and Analysis Plan (SAP) dated June 14, 2019. During the sampling period, 24-hour composite samples were collected from each source which were then composited to generate one combined ocean disposal composite sample for each of the sample days. The composite sample was analyzed for a list of parameters as requested by USEPA Region 9, including volatile organic compounds (VOCs), metals, pyrethrins, formaldehyde, nitrogen compounds, phosphorus, and general chemistry (e.g., oil and grease, solids, volatile solids, etc.), among others. The full list of analytes and results are provided in Attachment 2 and were previously provided to USEPA on July 24, 2019.

The composite sample representing the combined waste streams proposed for ocean disposal was also subjected to bioassay testing as outlined in the Ocean Disposal Bioassay Testing SAP dated June 14, 2019. The purpose of the bioassay testing was to characterize the potential toxicity of the ocean disposal waste to three separate sensitive marine, water-column dwelling organisms. Suspended particulate phase bioassays were performed using six dilutions (2.0, 1.0, 0.5, 0.25, 0.125, and 0.06%) and a laboratory control. Bioassay testing was completed on the combined ocean disposal composite sample collected on June 27, 2019 (as outlined above) and the results are provided in Attachment 2.

To demonstrate that the current wastewater data is compatible with historical combined waste stream conditions, the 2019 dataset was compared to historical datasets for various measured parameters. As outlined in Attachment 2, the samples of the combined ocean disposal wastewater collected in June 2019 are generally consistent with wastewater that was previously permitted for ocean disposal. When average concentrations for parameters analyzed in previous years were compared against the average concentration data collected in 2019, the 2019 concentrations were generally lower or within the historical average concentrations.

Further, a limiting permissible concentration (LPC) concentration was calculated in accordance with 40 CFR section 227.27 (a) where the LPC is the concentration of waste in the receiving water that does not exceed an acute toxicity threshold of 0.01 of the lowest acutely toxic concentration (i.e., the EC50 or LC50 of the sensitive marine organisms tested). The LPC was then compared to estimated waste sample concentrations at the edge of the dumping zone, based on 1997 plume dilution modelling (CH2M Hill 1997). The 1997 plume dilution modelling was based on dumping flow rates from the vessel, which are not expected to change. Bioassay results indicate that no adverse effects are expected to be observed at the edge



of the boundary under the conditions. Validated results from both the bioassay testing and the analytical testing programs are provided in Attachment 2.

# (d) Quantity of material to be dumped;

Up to four hundred thousand (400,000) U.S. gallons per day which is consistent with the combined fish waste volumes historically permitted from the two canneries. This volume assumes that more than one dumping run would be completed in a day.

## (e) Proposed dates and times of disposal;

The fish processing waste is generated whenever the Starkist facility is in operation. Starkist requests 400,000 gallons per day in order to allow operational flexibility in the facility's ocean dumping schedule. Additionally, there may be a need for accumulation of wastes and daily dumping up to 400,000 gallons in the event of unplanned downtime of the vessel or other emergency conditions. As noted above, this volume assumes that more than one dumping run would be completed in a day.

# (f) Proposed dump site, and in the event such proposed dump site is not a dump site designated in this subchapter H, detailed physical, chemical and biological information relating to the proposed dump site and sufficient to support its designation as a site according to the procedures of part 228 of this subchapter H;

The proposed dump site is the USEPA designated site in the Pacific Ocean confined to a circular area with a 1.5 nautical mile radius, centered at 14° 24.00' South latitude by 170° 38.30 West longitude.

# (g) Proposed method of releasing the material at the dump site and means by which the disposal rate can be controlled and modified as required;

The proposed method of releasing the fish processing waste at the dump site is through a pump/pipe system connecting the vessel's six holding tanks to a single discharge port at the stern of the vessel. Disposal rate during dumping is controlled by a manifold system with valves that allows the vessel crew to manually<sup>1</sup> release the fish waste from the holding tanks at a controlled rate. The flowrate of the discharge is then measured at a point closer to the discharge port (i.e., after the manifold). This approach to disposal allows for vessel stability to be maintained during discharge. See Section (c) above for more details on the vessel instruments monitoring and reporting of disposal rates.

<sup>&</sup>lt;sup>1</sup> The valve system is manual with crew opening and closing valves as needed. To maintain stability, the crew will release fish waste from two tanks simultaneously, the tanks on opposite sides of the vessel (port and starboard). The level of each tank will be measured with sounding tape and/or a float switch system that displays the tank level. Each tank will also have a low- and high-level alarm system. Additionally, the vessel is equipped with multiple inclinometers to determine and maintain stability.



## (h) Identification of the specific process or activity giving rise to the production of the material;

The fish processing waste is produced from the tuna canning process at the Starkist facility. The DAF sludge originates from the DAF treatment system which is a physical/chemical separation process to remove suspended material from the combined wastewater streams generated in the production facility. This treatment is achieved by dissolving air in a wastewater stream and combining it with the DAF influent under pressure, then releasing the air at atmospheric pressure in the flotation tank. The DAF influent is treated with aluminum sulfate (alum) and anionic polymer to improve solids separation. Solids and Oil and Grease particles adhere to the dissolved air, and these materials float to the surface of the DAF where they are removed from the surface as DAF float. DAF bottoms are materials that are unable to float due to their relative weight and sink to the bottom of the DAF for collection and removal via the DAF bottoms pump system. DAF float and DAF bottoms comprise the DAF sludge discussed in this permit application.

Wastewater from the pre-cookers is generated from condensed steam used to cook the fish, and from the release of liquids as the fish is cooked. Vegetable broth is added to some of the fish before entering the pre-cookers and a portion of the broth drains from the fish during the cooking process, accumulating in the pre-cooker wastewater. The pre-cooker area wastewater is currently collected in the pre-cooker sump, from which it is pumped to the fishmeal area for treatment via the steam-fed evaporator (SFE). Starkist intends to ocean dispose all the pre-cooker wastewater and discontinue treatment via the SFE.

Press water/liquor (also referred to as stickwater) generated from the fishmeal process was historically discharged to the fishmeal sump, along with other wastewater side streams generated in the fishmeal process, and the contents of the fishmeal sump were ocean disposed. In November 2017, Starkist installed a waste heat evaporator (WFE) for the removal of solids from the stickwater into a concentrate for beneficial re-use into fishmeal product. The condensate portion of the stickwater from the WFE continues to be discharged into the fishmeal sump, along with the other wastewater side streams historically generated in the fishmeal process area. The combined wastewater stream, including the WFE condensate and wastewater sources collecting in the fishmeal sump, will be ocean disposed.

# (i) Description of the manner in which the type of material proposed to be dumped has been previously disposed of by or on behalf of the person(s) or firm(s) producing such material;

Until 1975, Starkist disposed of liquid wastes through direct discharge into the Harbor. As a result of the deleterious effects of harbor dumping, Starkist installed sludge-generating DAF equipment between 1974 and 1975. From 1975 until 1980, sludge generated by the DAF equipment was disposed of on land at one of two terrestrial dumping sites, which included a pit near Tafunafou on Tafuna and a diked ravine near Futiga. After numerous concerns were raised regarding land dumping practices, including serious human health hazards, water contamination, land space limitations, cultural practices (e.g., communal land ownership) and aesthetics (e.g., odors and traffic congestion), the USEPA issued a permit for ocean disposal in 1980. Starkist and Van Camp Seafood (VCS), subsequently operated as Chicken of the Sea (COS), began ocean disposal of fish wastes off the south coast of Tutuila Island, American Samoa in December of 1980 (Permit Number: OD 79-01/02 Special). Both Starkist and VCS/COS historically applied for coordinated ocean dumping permits and shared the cost of the ocean dumping vessel and monitoring programs, disposal vessel navigation system, and monthly ocean disposal site monitoring.

P.O. Box 368

Pago Pago, AS 96799



Research Permits were issued on February 26, 1987 (OD 86-01), September 2, 1987 (OD-87-01), March 4, 1988, (OD 88-01), and September 12, 1988 (OD 88-02). In 1990, the disposal site was moved further offshore into deeper water based on an Environmental Impact Statement (EIS) conducted February 24, 1989 (USEPA 1989). Special Permits were issued in 1990 (OD 90-01) and 1993 (OD 93-01).

The permitted disposal volume of fish processing waste was a total of 400,000 gallons per day (200,00 gallons per day per cannery). A major Tsunami struck the island in September 2009, damaging the facility, disrupting operations, and leading to the suspension of operations at the VCS/COS facility. Starkist continued ocean dumping through to approximately May 2012 at which time it began treating the high strength wastewater through a new wastewater treatment system.

Between 2012 and 2017, the previously ocean dumped fish wastes were pre-treated by a high strength wastewater treatment system before being combined with the remaining wastewater streams. The combined wastewater stream was then treated by a DAF system and discharged to an outfall diffuser in the Harbor via the Joint Cannery Outfall (JCO).

In November 2017, Starkist installed two fishmeal evaporators to reduce the pollutant loading discharged to the Harbor from the press water/liquor and the pre-cooker wastewater streams. The evaporators are required by Starkist's Consent Decree, effective March 7, 2018. The evaporators generate a concentrate stream which can be processed with the fish solids through the fishmeal drying process; however, the capacity of the fishmeal drying process is limited and not all of the concentrate can be processed each day. Since May 2018, StarKist has disposed of a portion of the evaporator concentrate to the local landfill. Starkist regularly communicates with the American Samoa Power Authority (ASPA) and the American Samoa EPA (ASEPA) on this matter.

Through conversations with the ASEPA and ASPA, Starkist understands that the capacity of the landfill is limited, and the concentrate generates nuisance odor which limits the long term feasibility of this disposal method. A permit to ocean dispose the three fish waste streams outlined in this permit application will end the need for ongoing concentrate disposal at the landfill.

(j) A statement of the need for the proposed dumping and an evaluation of short and long term alternative means of disposal, treatment or recycle of the material. Means of disposal shall include without limitation, landfill, well injection, incineration, spread of material over open ground; biological, chemical or physical treatment; recovery and recycle of material within the plant or at other plants which may use the material, and storage. The statement shall also include an analysis of the availability and environmental impact of such alternatives;

Starkist historically dumped fish processing waste based on the need demonstrated in the 1989 (EIS) (USEPA 1989). As noted above in Section i, the USEPA permitted ocean dumping at a designated offshore site in 1980. The designated site, at the time, was approximately 2.25 nautical miles from the nearest fringing reef. From 1980 to 1986 DAF sludge was dumped by Special Permit OD 79-01 and OD 79-02 (each cannery had its own permit). Due to cannery production growth, it was decided in 1986 to increase the diameter of the ocean dumping site and move the location south southeast from its original location. The drawback of the original designated site was that it could not be expanded appreciably without the plume being carried toward shallow water habitats if larger quantities of waste were dumped.

P.O. Box 368

Pago Pago, AS 96799



The EIS considered three alternatives for fish waste dumping: No Action, Land-based dumping, and oceanbased dumping. Each alternative included a set of options that were evaluated to select the approach with the lowest potential for human health and ecological impacts.

The "No Action" alternatives included: dumping without a permit, dumping on land, discontinue the use of DAF equipment, and discontinue operations in American Samoa. The no action alternatives were considered to either cause violations with local and federal regulations or deprive American Samoa of its major industry. Land-based alternatives included: ponding, landfilling, percolation of saline cannery waste. For the land-based alternatives, the EIS concluded that "the cumulative effect of these attempts to carry out land dumping have illustrated well the fact that land dumping on island territories is not a feasible alternative to management of fish processing wastes."

Based on the issues associated with land-based dumping, ocean dumping was the most viable and protective alternative. Three ocean-based alternatives were evaluated; shallow water site, the original permitted site, and deep-water site. The deep-water alternative was selected because this site offered the most protection against possible surface slicks approaching shores, there was minimal possibility that the plume would encroach on environmentally sensitive areas at this site, and it provided a larger mixing zone and dilution zone. It was deemed safe for disposal for larger quantities of waste.

Since no new land-based disposal options are available and the status of the previously reviewed options have not changed since 1989, the findings of the EIS continue to reflect the options for alternative disposal options.

As discussed in Section i (above), Starkist discontinued ocean dumping in 2012. Since 2012, the fish waste has been discharged via the Joint Cannery Outfall, which increased pollutant loading to the Harbor. As a result, Starkist upgraded the wastewater treatment systems, beginning in 2017 through early 2018, and have significantly reduced loading rates for Total Suspended Solids, Total Phosphorus, Total Nitrogen, Ammonia, and Oil and Grease, in part by recovering material within the fishmeal operations from the evaporators. However, through ongoing optimization efforts, a portion of the concentrate generated by the evaporators could not be recovered through the fishmeal dryers and required landfill disposal. Starkist's desire to reduce the overall nutrient loading to the Harbor and discontinue landfilling of concentrate from the plant, results in a need to re-engage in ocean dumping of fish waste.

Chemical, biological and physical options to upgrade the existing wastewater treatment system to achieve the NPDES permit limits for discharges to the Harbor via the JCO have been evaluated by Starkist. Through this process, two key constraints have been identified: footprint and operational complexity in a remote setting.

Additional footprint at the Facility for upgraded wastewater treatment systems is highly constrained by the orientation of the site relative to the mountains, the highway, and the Harbor. The size of a treatment system required to treat up to 2.9 million gallons per day of wastewater and meet the current NPDES permit limits without the resumption of ocean dumping, would only be feasible through capital investments on the order of \$65M.

To the extent a treatment system can even be designed and constructed to meet the draft NPDES Permit limits, given the very limited space available at the Facility, it is important to recognize that the operation

P.O. Box 368



of a complex treatment system in a remote location with limited local operation and maintenance resources increases the risk of future non-compliance. Contracting skilled off-island treatment operators may be possible but at a significant premium, while the local mechanical, electrical, and instrumentation and control staff are less skilled than in other parts of the United States, requiring emergency off-island support in the event of equipment failure. For example, recent repairs to wastewater treatment equipment prompted a shutdown of the production facility due to the limited ability for off-island contractors to travel to the site on one of the twice-weekly flights between Hawaii and American Samoa, even on an emergency basis. The risk to effluent wastewater compliance associated with operational complexity are significant.

The anticipated costs to attempt to meet the NPDES effluent limits presents a serious challenge to the viability of the facility and have necessitated Starkist to evaluate its options to close the facility and transfer production elsewhere. Transferring production off the island would have a very negative impact on the American Samoa economy. Starkist is the largest private-sector employer in American Samoa, with approximately 2,400 direct employees approximately 16% of the American Samoa workforce; approximately the same number of people are employed indirectly in jobs that result from Starkist's operations in American Samoa. An estimated 90% of the shipping containers leaving the Port of Pago Pago are associated with Starkist's operations. Starkist is already operating at a significant cost disadvantage to its competition in the tuna canning industry as a result of the competition's exclusive use of foreign canneries in low-wage countries. According to a 2016 Government Accountability Office (GAO) report, Starkist could save at least \$7.6 million annually - and as much as \$22.3 million annually - by relocating its American Samoa operations to another tariff-free country with lower labor costs.<sup>2</sup> The cost savings associated with moving operations would grow significantly without an appropriate ocean dumping permit.

The ASEPA supports ocean dumping of fish waste. During an in-person meeting<sup>3</sup> between Starkist, USEPA, and the ASEPA to discuss ocean dumping, Director Fa'amao Asalele, Jr. (ASEPA) commented on the limited capacity of the landfill on the island of American Samoa to continue accepting concentrate from the Starkist facility and urged USEPA and Starkist to develop the information necessary to submit, review and approve an application for Ocean Disposal. Director Asalele stressed the impact of this permit on improving operations at the landfill, including issues with odors and community complaints.

# (k) An assessment of the anticipated environmental impact of the proposed dumping, including without limitation, the relative duration of the effect of the proposed dumping on the marine environment, navigation, living and non-living marine resource exploitation, scientific study, recreation and other uses of the ocean.

The environmental impact of the proposed dumping in American Samoa has been demonstrated in the EIS conducted by the USEPA. With input from federal and local agencies and the public, USEPA designated the current deep-water dumping site. As noted above in Section j, the designation was based on the determination that ocean dumping of fish waste was the preferred alternative over other alternatives

<sup>&</sup>lt;sup>2</sup> U.S. Government Accountability Office. *American Samoa: Alternatives for Raising Minimum Wages to Keep Pace with the Cost of Living and Reach the Federal Level.* December 2016.

<sup>&</sup>lt;sup>3</sup> Meeting was conducted May 8, 2019 at the USEPA Region 9 office, San Francisco, CA.



proposed for disposing of fish waste. The EIS determined that "no cumulative effects of ocean disposal are expected under presently permitted quantities of dumping. The currents and winds effectively dissipate the wastes, and none are measurable after four hours, nor are they visible on the morning following the previous day's disposal to indicate a buildup of wastes. The assimilative capacity of the open ocean is enormous. There should be no buildup of any pollutants under existing disposal practices."

Starkist has historically dumped fish waste at the EPA designated disposal site, as recent as 2012. In compliance with EPA's ocean dumping criteria at 40 CFR Parts 227 and 228 and pursuant to MPRSA of 1972 (33 U.S.C. §1401 et seq.), Starkist collected monthly data at the dump site (receiving waters and vessel operations) and the onshore storage tank to document the impact to the ocean dumping operation. In compliance with Special Conditions outlined in the previous permit (OD 93-01), Starkist routinely (i.e., every three months during the permit period) provided USEPA with Ocean Disposal Site Monitoring Reports during historical ocean dumping activities. These reports included ocean dumping vessel operations information, dump site monitoring data, and fish waste processing data including analytical and bioassay testing results. Based on Starkist's demonstration of compliance with permit conditions submitted to USEPA in these reports, there have been no discernable permanent effects on the water quality of the ocean in or near the dump site. Starkist proposes to dispose of fish waste from the same waste streams historically permitted.

As described in Section c (above and in Attachment 2), current analytical and biological toxicity data show consistent results with historical data from the same permitted combined waste streams. Based on dilution levels expected at the designated ocean dumping site, the fish processing wastes are not expected to cause significant short- or long-term impacts to oceanic water quality, marine ecosystems or human health.

#### Closing

We appreciate the USEPA's prompt review of the Ocean Dumping permit application information summarized in this letter. Should you have any questions about this submission, please feel free to contact me at 684.622.2003.

Sincerely,

Jason Kim

Jason Kim General Manager, Starkist Samoa Co.

Copies to:

Ms. Elizabeth Sablad and Ms. Sara Goldsmith – USEPA Ms. Ellen Blake – USEPA Director Fa'amao Asalele – ASEPA Archie Soliai, Edmund Kim and John Dearness – Starkist Samoa Co. Jeff Roberts, Esq., Mike Schenk and Scott Meece – StarKist Co. Janet Goodfellow, Keith Kroeger and Brandon Steets – Geosyntec Consultants Scott Dismukes, Esq. and Dave Rockman, Esq. – Eckert Seamans

P.O. Box 368

Pago Pago, AS 96799

www.starkist.com



# Literature Cited:

CH2M Hill. 1997. Revised Report for Joint Cannery Ocean Dumping Studies in American Samoa.

U.S. Environmental Protection agency (USEPA). 1989. Final Environmental Impact Statement for the Designation of an Ocean Disposal Site off Tutuila Island, American Samoa for Fish Processing Wastes. February.

# **Application Supporting Attachments:**

Attachment 1: Aquatic Blue Vessel Specifications Sheet

Attachment 2: Ocean Dumping - Physical and Chemical Description of Material to be Dumped

Attachment 3: Ocean Dumping Monitoring Plan

# ATTACHMENT 1 AQUATIC BLUE VESSEL SPECIFICATIONS



#### DIMENSIONS

| Length        |  |
|---------------|--|
| Beam          |  |
| Depth         |  |
| Clear Deck    |  |
| Deck Cargo    |  |
| Gross Tonnage |  |

#### LIQUID CAPACITIES

Potable Water Fuel Liquid Mud Bulk Tanks Lube Oil 197,000 Gals. 85,000 Gals. 1,100 BBLS 3,900 Cu Ft. (6 tanks) 600 Gals.

197 Ft 40 Ft

14 Ft

145 Ft x 33 Ft 775 LT 151 GT

#### DELIVERY RATES

Fuel Water Liquid Mud

#### MACHINERY

Main Engines Max HP

Speed

Fuel Burn

Generators

Bow Thruster Dynamic Positioning 450 GPM @ 100 Ft 530 GPM @ 100 Ft. 21 LBS PM @ 100 Ft.

2 – 3512 Caterpillars 2,600 12 Knots 124 GPH Cruising 12 GPH Standby

2 – 3306 Caterpillars - 175KW 8V-71-300HP Beier - IVCS 2000 DP1

# DP1 BEIERS - IVCS 200 REPOWERED IN 2003 V 3512 CATERPILLARS

Jump Rack Stern

#### ELECTRONICS

2 VHF Marine Radios SSB Radio adars

Internet SAT Phone TV - Direct TV DVD

#### **OTHER FEATURES**

Central A/C & Heat Hull & Safety Equipment Laundry Ice Maker Jump Rack

## CERTIFICATIONS

USCG Licensed and Approved For Oce USCG Licensed and Approved for 181

# ATTACHMENT 2

# Ocean Dumping - Physical and Chemical Description of Material to be Dumped



130 Stone Road West Guelph, Ontario N1G 3Z2 PH 519.822.2230 FAX 888.635.3470 www.geosyntec.com

# Attachment 2

Date: August 29, 2019

Subject: Application for Ocean Disposal Permit - Sampling Results

Starkist Samoa Co., a wholly owned subsidiary of the StarKist Co. (collectively referred to as StarKist), is submitting an application to the United States Environmental Protection Agency (USEPA) for ocean dumping of fish waste. This attachment presents bioassay toxicity testing and chemical results to support the permit application [Section (c)] request for adequate physical and chemical description of material to be dumped.

The StarKist Facility historically operated under a Special Permit (OD93-01 Special) issued by the USEPA for ocean dumping of high strength wastewater streams. StarKist discontinued this program in approximately July 2012. StarKist has a need to resume ocean dumping of the same previously permitted high strength wastewater streams.

# BACKGROUND

StarKist conducted sampling and analysis of the combined wastewater from streams designated for ocean disposal in 40 CFR 228, namely Dissolved Air Flotation (DAF) sludge, pre-cooker wastewater, and the treated discharge from presswater which collects in the fishmeal sump (fishmeal sump). The combined ocean disposal samples were analyzed for a suite of chemical analytes and for biological toxicity using a bioassay testing approach consistent with the historical ocean disposal bioassay testing.

In support of the sampling and analysis, two Sampling and Analysis Plans (SAPs) were developed and submitted to USEPA for review and approval; one for wastewater sampling and analytical testing (Analytical SAP, dated June 14, 2019), and the other for wastewater sampling and bioassay testing (Bioassay SAP, dated July 24, 2019).

Samples were collected in late June 2019. More specifically, 24-hour composite samples were collected of the historical ocean disposal streams (fishmeal sump wastewater, DAF sludge, and pre-cooker wastewater) over five days within a two-week period and these samples were submitted to the laboratory for analysis. On the final day of sampling, additional volume of the 24-hour composite was collected and submitted to the laboratory for bioassay testing.

2019 08 29 OD Application Attachment\_Results Summary.docx

The following sections summarize the testing completed on these samples and the associated results. The bioassay and analytical testing laboratory's data packages are provided as appendices to this attachment.

# **BIOASSAY TESTING**

Consistent with the historical permit for ocean disposal, bioassay testing was conducted to characterize the potential toxicity of high-strength waste to sensitive marine, water-column dwelling organisms. Sampling of the three wastewater streams was initiated on June 26, 2019 and completed on June 27, 2019, and the three samples were composited to generate a combined composite on June 27, 2019. Testing was initiated July 1, 2019.

The three test species used were the purple sea urchin (*Strongylocentrotus purpuratus*) larvae, mysid shrimp (*Americamysis bahia*), and inland silverside (*Menidia beryllina*). Consistent with historical bioassay tests, suspended particulate phase bioassays were performed using six dilutions (2.0, 1.0, 0.5, 0.25, 0.125, and 0.06% of the combined ocean disposal wastewater sample) and a laboratory control. The shrimp and silverside tests were run for 96-hours, ending July 5, 2019. The sea urchin test was run for 72-hours, ending July 4, 2019.

# **Bioassay Results**

Results for the three bioassay tests were received from Enthalpy Analytical (formerly Nautilus Environmental) on July 24, 2019 and available laboratory reports are provided in Appendix A. All tests met the test acceptability criteria (i.e., the silversides and mysids showed less than 10% mortality in the controls and there was 80% normal shell development in the urchin control). Concurrent reference toxicant tests met all minimum test acceptability requirements and the Percent Minimum Statistical Difference (PMSD) value for the chronic urchin development test was within the acceptable range. The calculated median effect concentration values for all reference toxicant tests were within two standard deviations of the historical means, indicating typical organism sensitivity to copper.

Results of the three bioassay tests on diluted waste are presented in Table 1, along with a comparison of bioassay test results from historical testing in 1994/95. In 2019, the lab indicated one water quality deviation that was immediately addressed where possible; specifically, dissolved oxygen dropped to concentrations below 4 mg/L in the top two concentrations in the fish test and the top four concentrations in the urchin test. To address this issue, the fish and mysid shrimp tests were put on constant aeration; however,

the urchin test was not aerated due to the potential interference of aeration with the integrity of the urchin embryos in this test.

The samples were received slightly above the temperature range of 0-6  $^{\circ}$ C (6.8  $^{\circ}$ C at receipt). All tests were initiated within 98-hours of when the sample was collected. The laboratory controls met all minimum test acceptability requirements. Statistical analyses followed standard USEPA flowchart selections. The PMSD value for the urchin test was within the acceptable range. The data are deemed reliable for reporting purposes

**Ammonia Results**. The lab noted that ammonia levels in the sample were elevated. Subsamples were collected from each of the three bioassays upon initiation and at termination for each test, with the exception to the urchin development test at test termination due to technician error. Additional subsamples were collected for the mysid and inland silverside tests at 48 hours, prior to the test solution renewal. The subsamples were collected from the highest test concentration (2.0% sample) for each of the bioassays. If complete mortality in the highest concentration had occurred, then the concentration below was subsampled. Total ammonia in the 2.0% sample concentration ranged from 49.7 to 51.4 mg/L at the initiation of the bioassays.

Ammonia levels remained stable throughout the testing period. At the termination of the mysid test, subsamples were collected from two individual replicates in the 1% sample concentration (complete mortality had occurred in the 2.0% sample by 48 hours), one with complete survival, and one with no survival. Total ammonia measurements were within 10% of each other (23.5 mg/L in the replicate with no survival, 24.9 mg/L in the replicate with no mortality), suggesting that for this species, ammonia may not be the primary or sole driver of toxicity. However, ammonia may have contributed to the observed effects.

**Test Replicate Variability**. Relatively high variability in test replicate response was observed in some test concentrations. This was most apparent in the mysid and urchin tests. All test solutions were thoroughly homogenized prior to making test dilutions as well as prior to distribution to the individual test chambers. However, it was noted at sample receipt that the sample had a large portion of heavy particulate matter that settled quickly. In the higher concentrations (specifically the 0.5 and 1.0% sample) of the mysid test, some replicates had complete survival while others had complete mortality. In the urchin test, some replicates of the 0.06% concentration showed a partial response (i.e., some normally developed embryos), while other replicates showed no normally developed embryos. The inter-concentration variability combined with the bench

observations suggest that at least a portion of the toxicity may be associated with particulate matter in the sample.

# **Results for Inland Silverside**

The inland silverside demonstrated no significant toxicity at sample concentrations below 0.5% and demonstrated 100% mortality in the 2% sample. The No Observed Effect Concentration (NOEC) and the LC50 were estimated as 1.0% and 1.41%, respectively. As shown in Table 1, NOEC and LC50 results for the silversides show less toxicity in 2019 than in tests conducted in 1994/95 with sand dabs, *Citharichthys stigmaeus*, in which the NOEC was reported to range from 0.2 to 0.25% and the LC50 ranged from 0.27 to 0.396%.

# **Results for Mysid Shrimp**

The mysid shrimp demonstrated no significant toxicity at sample concentrations below 0.25% and demonstrated 100% mortality in the 2% sample. The NOEC and the LC50 were estimated as 0.25% and 0.49%, respectively. Variability among replicates in the myside shrimp test was observed in the 0.25, 0.5, and 1.0% samples. As shown in Table 1, NOEC and LC50 results are comparable to those of mysid shrimp tests conducted in 1994/95 in which the NOEC was reported to range from 0.05% to 0.5% and the LC50 ranged from 0.12 to 1.16%.

# **Results for Sea Urchin**

The sea urchin test showed abnormal development in all sample dilutions ranging from 0.06 to 2.0%; however, some normal development also was observed in the 0.06% sample. As shown in Table 1, the EC50 result from 2019 is comparable to the urchin test conducted in 1994/95 in which the EC50 was < 0.08%. Similarly, the 2019 urchin EC50 is comparable to the estimated EC50 for mussels in the first of two bivalve larval development tests performed in 1994/95 in which the EC50 was also < 0.08%. The NOEC was reported as < 0.06% in the 2019 test and was not reported on in the 1994/95 tests but was at a minimum < 0.08%. Deviations in water quality, elevated ammonia, and particles in the sample are possible contributors to the observed toxicity. Historical bioassay reports suggest that elevated ammonia, also observed during 1994/95 bioassay testing, is a potential cause of the observed toxicity.

# **Limiting Permissible Concentration**

The limiting permissible concentration (LPC) was calculated in accordance with 40 CFR section 227.27 (a) where the LPC is the concentration of waste in the receiving water that

does not exceed an acute toxicity threshold of 0.01 of the lowest acutely toxic concentration (i.e., the EC50 or LC50 of the sensitive marine organisms tested). The LPC was then compared to estimated waste sample concentrations at the edge of the disposal zone, based on the 1997 plume dilution modeling (CH2M Hill 1997).

The LPC was calculated using the lowest EC/LC50 result of 0.04% for the purple sea urchin sample and applying the 0.01 factor (40 CFR 227.27), resulting in an LPC of 0.0004% sample (i.e., or 1% of the lowest EC50 measured in bioassay tests [0.04%]). Based on the 1997 plume dilution modeling (CH2M Hill 1997), which is the most current ocean disposal modeling information available, the estimated combined ocean disposal wastewater concentration at the edge of the disposal zone is 0.00025% (i.e., assuming a minimum dilution of 1:400,000). The estimated edge of disposal zone waste concentration is lower than the LPC, indicating that toxicity would not be observed at this boundary under the conditions assumed in this model<sup>1</sup>.

# CHEMICAL ANALYSIS

The historical ocean disposal program required routine analysis of the combined wastewater streams for ocean disposal for ammonia, oil and grease, total nitrogen and total phosphorus, total solids and total volatile solids. The USEPA requested that StarKist analyze the combined ocean disposal wastewater stream for additional chemical parameters, including volatile organic compounds (VOCs), metals, pyrethrins, formaldehyde, nitrogen compounds, phosphorus, and general chemistry (e.g., oil and grease, solids, volatile solids, etc.), among others.

Sampling of the three wastewater streams was initiated on five separate days between June 20 and 27, 2019, and 24-hour composite samples were collected from each source and were then composited to generate one combined, 24 hour composite sample, for each of the sample days. The samples were shipped off-island to TestAmerica Laboratories in Irvine, California on the next available flight.

<sup>&</sup>lt;sup>1</sup> The results of the 1997 model predict minimum dilutions of approximately 400,000:1 at the edge of the dumping zone (for summer conditions with an ocean current of 0.8 knots and a dumping rate of 1200 gallons per minute corresponding to a vessel speed of 10 knots). These dilutions are predicted under what the authors of this report consider to be conservative (under predicted dilutions) and worst case conditions. The time allowed for dispersion in this model is unclear; however, by dividing a given distance (e.g. 2.5 nautical miles to the edge of the dumping zone) by the current speed (0.4 knots and 0.8 knots), the time is estimated to be 6.25 hours and 3.125 hours, respectively.

# **Analytical Results**

Final results for the chemical analysis of samples collected in June 2019 have been received from TestAmerica and available laboratory reports are provided in Appendix B.

The data has been reviewed and validated by Geosyntec and are provided in Table 2. Of particular note are the rejected data for VOCs and some nitrogen compounds based on hold time and temperature exceedances. As discussed with USEPA, these issues demonstrate the challenges with shipping samples off-island. In particular, the temperatures of the coolers measured by the laboratory upon receipt were much higher than were observed during previous sampling events. The cause for the higher than anticipated temperatures is under review for future sampling events.

To demonstrate that the current wastewater data is compatible with historical combined waste stream conditions, the 2019 dataset was compared to historical datasets for various measured parameters. Pyrethrins results are not presented in Table 3 as there is no historical data to compare 2019 results to at this time. No pyrethrins were detected for the samples collected in 2019 (Table 2). For comparison purposes, the average for a subset of the sample parameters from June 2019 is presented in Table 3 for parameters for which historical sampling data is available, including data from November 2018<sup>2</sup>, historical ocean disposal data from the 2010<sup>3</sup> ocean disposal program (i.e., during the term of the 1998 Special Permit), and historical ocean disposal metals data from 1990 to  $1993^4$  (i.e., during the term of the 1990 Special Permit).

When average concentrations for parameters analyzed in 2010 are compared against the average data collected in June 2019, all concentrations, except for total phosphorus, are lower than the average data from 2010; total phosphorus is the same as historical data. Similarly, when the average metals data collected June 2019 are compared against the calculated average metals concentrations for a combined ocean disposal wastewater stream from 1990 to 1993, the metals concentrations in 2019 are generally lower, with the exception of aluminum. It is possible that the aluminum concentration is higher in

<sup>&</sup>lt;sup>2</sup> In November 2018, StarKist completed a wastewater characterization study of the various wastewater streams, including DAF sludge, pre-cooker wastewater and the fishmeal sump. The wastewater quality of the combined ocean disposal wastewater stream was estimated by using the total loading contributed from each wastewater stream in proportion to each stream's daily flowrate.

<sup>&</sup>lt;sup>3</sup> Data between January and December 2010 represents a period when the ocean disposal program was operating consistently.

<sup>&</sup>lt;sup>4</sup> As summarized in the Fact Sheet for the 1993 Ocean Dumping Permit (OD 93-01 Special) dated July 31, 1993. Note that the data is provided for each of the individual streams and a combined ocean disposal wastewater concentration was estimated using the permitted volumes for each stream.

2019 due to increased alum requirements in the DAF associated with treating the high strength wastewater streams that were historically ocean disposed prior to 2012.

Since most of the parameters analyzed in June 2019 were not historically analyzed, the data in Table 2 should also be reviewed in the context of the bioassay testing results. The bioassay testing results are consistent with historical bioassay testing results which suggests that the wastewater quality is also consistent with historical wastewater quality.

# Mercury, Copper, and Zinc Results

To provide insight into the wastewater analytical results for mercury, copper, and zinc, the Pollutant Minimization Plan (PMP) report prepared by gdc in December 2010 on StarKist's behalf as required by the 2008 National Pollutant Discharge Elimination System (NPDES) permit (Appendix C). At the time the PMP was completed, StarKist was ocean disposing the three wastewater streams discussed in this memorandum, therefore these streams were not included in the PMP investigation. However, as noted in the PMP report, the sources of these metals were identified to be the fish and equipment used to process the fish. Since these sources would also impact the pre-cooker wastewater, fishmeal sump, and the DAF sludge, a discussion of the information from the PMP is provided below.

More specifically, the findings of the report indicate that areas of the Facility where process wastewater is generated from water contact with raw and cooked tuna fish had elevated concentrations of all three metals. In addition, process wastewater that came into contact with galvanized fish bins (scows) at the site contained elevated concentrations of zinc. This type of scow has been in use at the Facility for many years.

Pre-cooker wastewater is generated from steam that comes into contact with steel racks and tuna in the pre-cooker area where all three metals may collect in the wastewater. Similarly, the fishmeal sump collects wastewater evaporated from stickwater generated from the processing of fish scraps. The DAF sludge is a mixture of solids that both float (DAF float) and sink (DAF bottoms) in the DAF treatment system which treats wastewater from all areas of the Facility, including thawing, spray cooling, butchering and packing processes. These are all areas where process wastewater comes into contact with tuna and galvanized steel.

The conclusions outlined in the PMP report also noted:

- There is no practicable way to reduce the source of mercury in the Facility other than maintaining good housekeeping practices that involve clean-up of fish scrap during washdown activities.
- The primary source of copper is from tuna. It was found that secondary sources of copper from plumbing fittings and piping appeared to be minor.
- The primary source of zinc is from tuna and scows. Scows are required in the marine environment to avoid excessive corrosion while transporting tuna and exposed to salt in ocean water used throughout the Facility.

# Water Quality Criteria

Chemical concentrations in undiluted waste samples were compared to recommended acute water quality criteria (WQC) for the protection of aquatic life (USEPA 2016). Concentrations of metals and total cyanide in undiluted combined ocean disposal wastewater samples were elevated above the acute WQC. However, when the estimated dilution factor of 1:400,000 (i.e., based on CH2M Hill 1997 plume dilution model) was applied to the sample results, the diluted sample result was below all corresponding WQC.

Table 4 provides a comparison of preliminary chemistry results for the combined ocean disposal wastewater samples to toxicity effects concentrations (i.e., EC50s) in the literature or from the ECOTOX database (USEPA 2019). Concentrations of several metals and ammonia in undiluted combined ocean disposal wastewater samples exceeded the corresponding toxicity effects concentrations. The magnitude of exceedance of the toxicity effects concentrations from the literature (i.e., EC50s) was greatest for ammonia and zinc. When compared to toxicity effects concentrations from the literature, diluted wastewater samples (i.e., based on 1997 plume dilution model estimated concentrations at the edge of disposal zone) showed no exceedances for any constituents.

# CONCLUSIONS

Based on the data summarized, the samples of the combined ocean disposal wastewater collected in June 2019 appear to be generally consistent with wastewater that was previously permitted for ocean disposal. Bioassay results indicate that no adverse effects are expected to be observed at the edge of the boundary under the conditions assumed the model.

# REFERENCES

- CH2M Hill, 1993. Draft Study Plan for Joint Cannery Ocean Dumping Studies in American Samoa.
- CH2M Hill, 1997. Revised Report for Joint Cannery Ocean Dumping Studies in American Samoa.
- CH2M Hill and gdc, 1997. Joint Cannery Ocean Dumping Studies in American Samoa. Revised Report. Submitted to U.S. EPA Region 9, American Samoa EPA. Prepared for StarKist Samoa and VCS Samoa Packing. June 1997.
- USEPA. 1995. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine & Estuarine Organisms. EPA-600-R-95-136.
- USEPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition (EPA/821/R-02/012). US EPA Office of Water, Washington, DC.
- USEPA, 2016. National Recommended Water Quality Criteria Aquatic Life Criteria Table. Updated Dec. 22, 2016. Available at: <u>https://19january2017snapshot.epa.gov/wqc/national-recommended-water-</u> <u>quality-criteria-aquatic-life-criteria-table\_.html#table</u>.
- USEPA, 2019. **ECOTOX** Knowledgebase. Updated June 13, 2019. Available online at: <u>https://cfpub.epa.gov/ecotox/</u>

\* \* \* \*

| Test  | Endpoint | 2019<br>Samples | 1994/95 Samples |         |              |  |  |
|---|----------|-----------------|-----------------|---------|--------------|--|--|
|   |          | 7/2019          | 2/1994          | 10/1994 | 6/1995       |  |  |
| Fish <sup>1</sup> 96 hr Survival Test       | NOEC     | 1.0             | 0.2             | 0.25    | 0.25         |  |  |
| Fish 96 hr Survival Test                    | LC50     | 1.41            | 0.27            | 0.35    | 0.396        |  |  |
| Mysid Shrimp 96 hr Survival                 | NOEC     | 0.25            | 0.05            | 0.5     | 0.5          |  |  |
| Test  | LC50     | 0.49            | 0.12            | 1.16    | 1.16         |  |  |
| Blue Mussel 48 hr Larval                    | EC50     | NT              | < 0.08          | 0.1     | <sup>2</sup> |  |  |
| Development Test                            | LC50     | NT              | >1.2            | >2.0    | 2            |  |  |
|   | NOEC     | < 0.06          | NC              | NC      | NC           |  |  |
| Sea Urchin 72 hr Embryo<br>Development Test | EC50     | 0.04            | < 0.08          | 3       | 3            |  |  |
| Development Test                            | LC50     | NC              | >1.2            | 3       | 3            |  |  |

Table 1. Bioassay Test Results with Comparison to 1994/1995 Samples

Notes

1 Sand dab (*Citharichthys stigmaeus*) were tested in 1994/95 and inland silverside (*Menidia beryllina*) tested in 2019

2 Mussel larvae were not available for test, requirement waived by U. S. EPA

3 Sea Urchin not tested in 10/1994 and 6/1995 with concurrence from U. S. EPA.

4 Median sublethal concentrations were defined as IC50 (median inhibitory concentrations) in 1994/95 and median effective concentrations (EC50) in 2019; however, effects measured and procedures followed were the same.

NC = Not Calculated

NT = Not Tested. Mussel species not tested in 2019.

#### Table 2. Combined Ocean Disposal Wastewater Analytical Results

| 490           1800           2200           0.78           0.12           2.5           179           0.81           25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5 | R  | 6/21/2019           2.5           550           2200           2600           0.74           0.14           2.5           170           0.71           25825           0.17           65000           2.5           0.19           0.42           0.037           2.5           0.069           7090           5 | R<br>J<br>J<br>R<br>UJ<br>R<br>UJ<br>R<br>J<br>R<br>R<br>J<br>R<br>J<br>R<br>J<br>J<br>J<br>J   | 6/25/2019           1.3           180           1700           2100           0.27           0.063           1.3           400           0.32           26250           0.077           51000           1.3           0.08           0.22           0.018           1.3           0.096           11.2   | R<br>J<br>J<br>R<br>UJ<br>UJ<br>UJ<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G<br>G   | 6/26/2019           1.3           740           2400           2900           1.3           0.23           1.3           400           1.20           23975           0.37           42000           1.3           0.27           0.86           0.021           1.3           0.11   | R<br>J<br>J<br>J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>J<br>R<br>J<br>J<br>R<br>J<br>J<br>J<br>J  | 6/27/2019           1.3           160           2400           3000           0.32           0.055           1.3           400           0.57           26357.5           0.081           43000           1.3           0.083           0.21           0.32           1.3           0.15  | R<br>J<br>J<br>R<br>UJ<br>UJ<br>J<br>R<br>J<br>R<br>J<br>J<br>R<br>J<br>R<br>J<br>R  | Average 424 2100 2560 0.6820 0.1216 309.8 UJ 0.7220 25618.5 0.1696 55000 0.1606 0.4140 0.0306 0.1610  | Concentration<br>(μg/L)<br><br>424,000<br>2,100,000<br>2,560,000<br>682<br>121.6<br><br>309.8<br>722<br>25,618,500<br>169.6<br>55,000,000<br><br>160.6<br>414<br>30.6   | Edge of Disposal<br>Zone (µg/L)<br>   | (acute)<br>(µg/L) <sup>2,4</sup><br>—<br>—<br>—<br>69<br>—<br>—<br>—<br>—<br>—<br>33<br>—<br>—<br>4.8<br>1<br>—  |
|---|--|--|---|--|---|---|--|---|--|---|---|---|--|
| 490           1800           2200           0.78           0.12           2.5           179           0.81           25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5 | J<br>J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>J<br>J<br>J<br>J               | 550           2200           2600           0.74           0.14           2.5           170           0.71           25825           0.17           65000           2.5           0.19           0.42           0.037           2.5           0.069           7090   | J<br>J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>J<br>R<br>J<br>J  | 180           1700           2100           0.27           0.063           1.3           400           0.32           26250           0.077           51000           1.3           0.08           0.22           0.018           1.3           0.096  | J<br>J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R   | 740<br>2400<br>2900<br>1.3<br>0.23<br>1.3<br>400<br>1.20<br>23975<br>0.37<br>42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11   | J<br>J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>J<br>R<br>J<br>R   | 160           2400           3000           0.32           0.055           1.3           400           0.57           26357.5           0.081           43000           1.3           0.083           0.21           0.032           1.3  | J           J           R           UJ           R           J           R           J           J           J           J           J           J           J           R           J           R           J           R           J           R           J   | 2100<br>2560<br>0.6820<br>0.1216<br><br>309.8 UJ<br>0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 2,100,000<br>2,560,000<br>682<br>121.6<br><br>309.8<br>722<br>25,618,500<br>169.6<br>55,000,000<br><br>160.6<br>414<br>30.6<br>   | 5.25         6.4         0.001705         0.000304         —         0.0007745         0.001805         64.04625         0.000424         137.5         —         0.0004015         0.001035         0.0000765  |  |
| 1800           2200           0.78           0.12           2.5           179           0.81           25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5               | J  <br>R  <br>UJ  <br>J  <br>R  <br>J  <br>R  <br>J  <br>R  <br>J  <br>J  <br>J  <br>J | 2200<br>2600<br>0.74<br>0.14<br>2.5<br>170<br>0.71<br>25825<br>0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090   | J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>J  | 1700           2100           0.27           0.063           1.3           400           0.32           26250           0.077           51000           1.3           0.08           0.22           0.018           1.3           0.096  | J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R  | 2400<br>2900<br>1.3<br>0.23<br>1.3<br>400<br>1.20<br>23975<br>0.37<br>42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11  | J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>R  | 2400<br>3000<br>0.32<br>0.055<br>1.3<br>400<br>0.57<br>26357.5<br>0.081<br>43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3  | J           R           UJ           R           J           R           J           R           J           R           J           R           J           R           J           R   | 2100<br>2560<br>0.6820<br>0.1216<br><br>309.8 UJ<br>0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 2,100,000<br>2,560,000<br>682<br>121.6<br><br>309.8<br>722<br>25,618,500<br>169.6<br>55,000,000<br><br>160.6<br>414<br>30.6<br>   | 5.25         6.4         0.001705         0.000304         —         0.0007745         0.001805         64.04625         0.000424         137.5         —         0.0004015         0.001035         0.0000765  |  |
| 2200           0.78           0.12           2.5           179           0.81           25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5                              | J  <br>R  <br>UJ  <br>J  <br>R  <br>J  <br>R  <br>J  <br>R  <br>J  <br>J  <br>J  <br>J | 2600<br>0.74<br>0.14<br>2.5<br>170<br>0.71<br>25825<br>0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090   | J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>J  | 2100<br>0.27<br>0.063<br>1.3<br>400<br>0.32<br>26250<br>0.077<br>51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096   | J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R  | 2900<br>1.3<br>0.23<br>1.3<br>400<br>1.20<br>23975<br>0.37<br>42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11  | J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>R  | 3000<br>0.32<br>0.055<br>1.3<br>400<br>0.57<br>26357.5<br>0.081<br>43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3  | J           R           UJ           R           J           R           J           R           J           R           J           R           J           R           J           R   | 2560<br>0.6820<br>0.1216<br><br>309.8 UJ<br>0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 2,560,000<br>682<br>121.6<br><br>309.8<br>722<br>25,618,500<br>169.6<br>55,000,000<br><br>160.6<br>414<br>30.6<br>  | 6.4           0.001705           0.000304              0.0007745           0.001805           64.04625           0.000424           137.5              0.0004015           0.001035           0.0000765   |  |
| 0.78           0.12           2.5           179           0.81           25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5   | R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>J<br>J<br>J<br>J                         | 0.74           0.14           2.5           170           0.71           25825           0.17           65000           2.5           0.19           0.42           0.037           2.5           0.069           7090   | R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>R<br>J<br>J   | 0.27<br>0.063<br>1.3<br>400<br>0.32<br>26250<br>0.077<br>51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096   | R<br>UJ<br>J<br>R<br>UJ<br>J<br>R<br>J<br>R<br>J<br>R   | 1.3           0.23           1.3           400           1.20           23975           0.37           42000           1.3           0.27           0.86           0.021           1.3           0.11   | R<br>UJ<br>J<br>R<br>R<br>J<br>R<br>J<br>R<br>R  | 0.32           0.055           1.3           400           0.57           26357.5           0.081           43000           1.3           0.083           0.21           0.032           1.3  | R<br>UJ<br>J<br>R<br>J<br>R<br>R<br>J<br>R<br>J<br>R<br>R  | 0.6820<br>0.1216<br><br>309.8 UJ<br>0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 682           121.6              309.8           722           25,618,500           169.6           55,000,000              160.6           414           30.6  | 0.001705<br>0.000304<br>  | 69<br>—<br>—<br>—<br>33<br>—<br>—<br>4.8<br>1<br>—   |
| 0.12           2.5           179           0.81           25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5  | UJ  <br>J  <br>R  <br>J  <br>R  <br>J  <br>R  <br>J  <br>J                             | 0.14<br>2.5<br>170<br>0.71<br>25825<br>0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090   | UJ<br>J<br>J<br>R<br>J<br>J<br>R<br>J<br>R<br>J<br>J  | 0.063<br>1.3<br>400<br>0.32<br>26250<br>0.077<br>51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096   | UJ<br>J<br>R<br>J<br>J<br>R<br>J<br>R   | 0.23<br>1.3<br>400<br>1.20<br>23975<br>0.37<br>42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11   | UJ<br>J<br>J<br>R<br>J<br>J<br>R<br>J<br>J<br>R  | 0.055<br>1.3<br>400<br>0.57<br>26357.5<br>0.081<br>43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3  | UJ<br>J<br>R<br>J<br>J<br>R<br>J<br>R  | 0.1216<br><br>309.8 UJ<br>0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 121.6              309.8           722           25,618,500           169.6           55,000,000              160.6           414           30.6  | 0.000304<br>—<br>0.0007745<br>0.001805<br>64.04625<br>0.000424<br>137.5<br>—<br>0.0004015<br>0.001035<br>0.0000765<br>—   |  |
| 2.5           179         U           0.81         25685           0.15         74000           2.5         0.18           0.36         0.045           2.5         0.08           6370         5   | UJ  <br>J  <br>R  <br>J  <br>R  <br>J  <br>R  <br>J  <br>J                             | 2.5<br>170<br>0.71<br>25825<br>0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090   | UJ<br>J<br>J<br>R<br>J<br>J<br>R<br>J<br>R<br>J<br>J  | 1.3           400           0.32           26250           0.077           51000           1.3           0.08           0.22           0.018           1.3           0.096   | UJ<br>J<br>R<br>J<br>J<br>R<br>J<br>R   | 1.3           400           1.20           23975           0.37           42000           1.3           0.27           0.86           0.021           1.3           0.11  | UJ<br>J<br>J<br>R<br>J<br>J<br>R<br>J<br>J<br>R  | 1.3           400           0.57           26357.5           0.081           43000           1.3           0.083           0.21           0.032           1.3   | UJ<br>J<br>R<br>J<br>J<br>R<br>J<br>R  | <br>309.8 UJ<br>0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  |   |   |  |
| 179         U           0.81         25685           0.15         74000           2.5         0.18           0.36         0.045           2.5         0.08           6370         5   | UJ  <br>J  <br>R  <br>J  <br>R  <br>J  <br>R  <br>J  <br>J                             | 170<br>0.71<br>25825<br>0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090  | UJ<br>J<br>J<br>R<br>J<br>J<br>R<br>J<br>R<br>J<br>J  | 400<br>0.32<br>26250<br>0.077<br>51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096   | UJ<br>J<br>R<br>J<br>J<br>R<br>J<br>R   | 400<br>1.20<br>23975<br>0.37<br>42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11  | UJ<br>J<br>J<br>R<br>J<br>J<br>R<br>J<br>J<br>R  | 400<br>0.57<br>26357.5<br>0.081<br>43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3  | UJ<br>J<br>R<br>J<br>J<br>R<br>J<br>R  | 309.8 UJ<br>0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 309.8           722           25,618,500           169.6           55,000,000              160.6           414           30.6   | 0.0007745<br>0.001805<br>64.04625<br>0.000424<br>137.5<br>—<br>0.0004015<br>0.001035<br>0.0000765<br>—  |  |
| 0.81           25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5   | J<br>R<br>J<br>J<br>R<br>J<br>J<br>J<br>J  | 0.71<br>25825<br>0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090   | J<br>R<br>J<br>J<br>J<br>R<br>R<br>J<br>J   | 0.32<br>26250<br>0.077<br>51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096  | J<br>R<br>J<br>J<br>R<br>J<br>R<br>R  | 1.20           23975           0.37           42000           1.3           0.27           0.86           0.021           1.3           0.11  | J<br>7<br>8<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>8  | 0.57<br>26357.5<br>0.081<br>43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3   | J<br>R<br>J<br>J<br>R<br>J<br>R  | 0.7220<br>25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 722<br>25,618,500<br>169.6<br>55,000,000<br><br>160.6<br>414<br>30.6<br>  | 0.001805<br>64.04625<br>0.000424<br>137.5<br><br>0.0004015<br>0.001035<br>0.0000765<br>   |  |
| 25685           0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5  | R  <br>]  <br>R  <br>]  <br>]  | 25825<br>0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090   | R<br>J<br>R<br>R<br>J<br>J  | 26250<br>0.077<br>51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096  | R<br>J<br>R   | 23975<br>0.37<br>42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11   | R<br>J<br>R  | 26357.5<br>0.081<br>43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3   | R<br>J<br>R  | 25618.5<br>0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>  | 25,618,500<br>169.6<br>55,000,000<br><br>160.6<br>414<br>30.6<br>   | 64.04625<br>0.000424<br>137.5<br><br>0.0004015<br>0.001035<br>0.0000765<br>   |  |
| 0.15           74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5  | R  <br>]  <br>R  <br>]  <br>]  | 0.17<br>65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090  | R<br>J<br>R<br>R<br>J<br>J  | 0.077<br>51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096   | R<br>J<br>R   | 0.37<br>42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11  | R<br>J<br>R  | 0.081<br>43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3  | R<br>J<br>R  | 0.1696<br>55000<br><br>0.1606<br>0.4140<br>0.0306<br>   | 169.6<br>55,000,000<br><br>160.6<br>414<br>30.6<br>   | 0.000424<br>137.5<br>   | 33<br>—<br>—<br>4.8<br>1<br>—  |
| 74000           2.5           0.18           0.36           0.045           2.5           0.08           6370           5   | R  <br>]  <br>R  <br>]  <br>]  | 65000<br>2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090  | R<br>J<br>R<br>R<br>J<br>J  | 51000<br>1.3<br>0.08<br>0.22<br>0.018<br>1.3<br>0.096  | R<br>J<br>R   | 42000<br>1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11  | R<br>J<br>R  | 43000<br>1.3<br>0.083<br>0.21<br>0.032<br>1.3   | R<br>J<br>R  | 55000<br><br>0.1606<br>0.4140<br>0.0306<br>   | 55,000,000<br><br>160.6<br>414<br>30.6<br>  | 137.5<br>   |  |
| 2.5           0.18           0.36           0.045           2.5           0.08           6370           5   | R  <br>]  <br>R  <br>]  <br>]  | 2.5<br>0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090   | R<br>J<br>R<br>R<br>J<br>J  | 1.3           0.08           0.22           0.018           1.3           0.096  | R<br>J<br>R   | 1.3<br>0.27<br>0.86<br>0.021<br>1.3<br>0.11   | R<br>J<br>R  | 1.3<br>0.083<br>0.21<br>0.032<br>1.3  | R<br>J<br>R  | <br>0.1606<br>0.4140<br>0.0306<br>  | <br>160.6<br>414<br>30.6<br>  |   | <br>4.8<br>1<br>   |
| 0.18<br>0.36<br>0.045<br>2.5<br>0.08<br>6370<br>5   | J<br>R<br>J<br>J   | 0.19<br>0.42<br>0.037<br>2.5<br>0.069<br>7090  | J<br>R<br>J   | 0.08<br>0.22<br>0.018<br>1.3<br>0.096  | J<br>R  | 0.27<br>0.86<br>0.021<br>1.3<br>0.11  | J<br>R   | 0.083<br>0.21<br>0.032<br>1.3   | J<br>R   | 0.1606<br>0.4140<br>0.0306  | 414<br>30.6<br>   | 0.001035<br>0.0000765   |  |
| 0.36<br>0.045<br>2.5<br>0.08<br>6370<br>5   | R<br>J<br>J  | 0.42<br>0.037<br>2.5<br>0.069<br>7090  | RJ  | 0.22<br>0.018<br>1.3<br>0.096  | R   | 0.86<br>0.021<br>1.3<br>0.11  | R  | 0.21<br>0.032<br>1.3  | R  | 0.4140<br>0.0306<br>  | 414<br>30.6<br>   | 0.001035<br>0.0000765   | 4.8<br>1<br>—  |
| 0.045<br>2.5<br>0.08<br>6370<br>5   | R<br>J<br>J  | 0.037<br>2.5<br>0.069<br>7090  | RJ  | 0.018<br>1.3<br>0.096  | R   | 0.021<br>1.3<br>0.11  | R  | 0.032   | R  | 0.0306  | 30.6  | 0.0000765   | 1  |
| 2.5<br>0.08<br>6370<br>5  | R<br>J<br>J  | 2.5<br>0.069<br>7090   | RJ  | 1.3<br>0.096   | R   | 1.3<br>0.11   | R  | 1.3   | R  |   |   | _   | _  |
| 0.08<br>6370<br>5   | J<br>J   | 0.069<br>7090  | J   | 0.096  |   | 0.11  |  |   |  |   |   |   |  |
| 6370<br>5   | J  | 7090   | -   |  | J   |   | J  | 0.15  |  | 0.1010  |   |   |  |
| 5   |  |  | J   | 11.2   |   |   |  | 0.15  | J  | 0.1010  | 101   | 0.0002525   |  |
|   | R  | 5  |   |  | J   | 8.8   | J  | 52  | J  | 2706.4  | 2,706,400   | 6.766   |  |
|   | 1  | 5  | R   | 2.5  | R   | 2.5   | R  | 2.5   | R  |   |   | _   | _  |
| 180   |  | 180  |   | 100  |   | 330   |  | 97  |  | 177.4   | 177,400   | 0.4435  | _  |
| 0.16  |  | 0.14   |   | 0.15   | U   | 0.30  | U  | 0.15  | U  | 0.1800  | 180   | 0.00045   | _  |
| 0.0046  |  | 0.0044   |   | 0.0023   |   | 0.0045  |  | 0.0036  |  | 0.00388   | 3.9   | 0.0000097   | _  |
| 11  | R  | 11   | R   | 5.5  | R   | 5.5   | R  | 5.5   | R  |   |   | _   | _  |
| 0.064   |  | 0.062  |   | 0.054  |   | 0.14  | J  | 0.05  | U  | 0.0740  | 74  | 0.000185  | 74   |
| 5.5   | R  | 5.5  | R   | ND   |   | 5.5   | R  | 5.5   | R  |   |   | _   | _  |
| 5.5   | R  | 5.5  | R   | 1.1  | R   | 5.5   | R  | 5.5   | R  |   |   | _   | —  |
| 0.31 U  | UJ   | 0.31   | UJ  | 0.31   | UJ  | 0.31  | UJ   | 0.31  | UJ   | 0.3100  |   |   |  |
| 2.5   | R  | 2.5  | R   | 0.5  | R   | 2.5   | R  | 2.5   | R  |   |   | _   | —  |
| 3700  | J  | 4000   | J   | 3700   | J   | 4200  | J  | 4200  | J  | 3960  | 3,960,000   | 9.9   | 115 <sup>3</sup>   |
|   |  |  | -   |  | R   |   |  |   |  |   |   | _   |  |
|   | J  |  | J   |  | J   |   | J  |   | J  |   |   |   |  |
|   | J  | 980  | J   | 570  | J   | 630   | J  | 690   | J  | 684   | 684,000   | 1.71  | 11 <sup>3</sup>  |
| 200   | U  | 200  | U   | 200  | U   | 200   | U  | 200   | U  |   |   |   |  |
|   | -  |  | -   |  | -   |   | -  |   | -  | 0.416   | 416   | 0.00104   | 290  |
|   |  |  | + +   |  |   |   |  |   |  |   |   |   |  |
|   | R  |  | R   |  | R   |   | R  |   | R  |   |   |   |  |
|   |  |  |   |  |   |   |  |   |  |   |   | 9.9   |  |
|   | -  |  |   |  |   |   |  |   |  |   | , ,   |   |  |
|   | -  |  | -   |  | 0   |   | -  |   | -  |   | .,,   |   |  |
|   |  |  | -   |  |   |   |  |   |  |   |   |   |  |
| 25  | ĸ  |  | K   |  | ĸ   |   | K  |   | ĸ  |   |   |   | 90   |
|   | 2.5<br>7.2<br>550<br>200<br>0.53<br>0.4<br>2.5<br>3700<br>35000<br>21000<br>2.5<br>24  | 7.2     J       550     J       200     U       0.53     -       0.4     -       2.5     R       3700     J       21000     J       2.5     R  | 7.2         J         11           550         J         980           200         U         200           0.53         0.42           0.4         0.45           2.5         R         2.5           3700         J         4000           35000         J         31000           21000         J         16000           2.5         R         2.5 | 7.2         J         11         J           550         J         980         J           200         U         200         U           0.53         0.42         0.4           0.4         0.45         0.45           2.5         R         2.5         R           35000         J         31000         J           21000         J         16000         J           2.5         R         2.5         R | 7.2         J         11         J         2.5           550         J         980         J         570           200         U         200         U         200           0.53         0.42         0.2         0.2           0.4         0.45         0.18           2.5         R         2.5         R         1.3           3700         J         4000         J         3700           35000         J         31000         J         33000           21000         J         16000         J         15000           2.5         R         2.5         R         1.3 | 7.2         J         11         J         2.5         J           550         J         980         J         570         J           200         U         200         U         200         U           0.53         0.42         0.2         0.2           0.4         0.45         0.18         1           2.5         R         2.5         R         1.3         R           3700         J         4000         J         3700         J           35000         J         31000         J         33000         J           21000         J         16000         J         15000         J           2.5         R         2.5         R         1.3         R | 7.2         J         11         J         2.5         J         3.3           550         J         980         J         570         J         630           200         U         200         U         200         U         200           0.53         0.42         0.2         0.73           0.4         0.45         0.18         0.58           2.5         R         2.5         R         1.3           3700         J         4000         J         3700         J         4200           35000         J         31000         J         33000         J         33000           21000         J         16000         J         15000         J         17000           2.5         R         2.5         R         1.3         R         1.3 | 7.2       J       11       J       2.5       J       3.3       J         550       J       980       J       570       J       630       J         200       U       200       U       200       U       200       U       200       U         0.53       0.42       0.2       0.73       I       0.73       I         0.4       0.45       0.18       0.58       I       I         2.5       R       2.5       R       1.3       R       1.3       R         3700       J       4000       J       3700       J       4200       J       J         35000       J       31000       J       33000       J       33000       J         21000       J       16000       J       15000       J       17000       J         2.5       R       2.5       R       1.3       R       1.3       R | 7.2         J         11         J         2.5         J         3.3         J         7.5           550         J         980         J         570         J         630         J         690           200         U         200         U         200         U         200         U         200           0.53         0.42         0.2         0.73         0.2           0.4         0.45         0.18         0.58         0.15           2.5         R         2.5         R         1.3         R         1.3           3700         J         4000         J         3700         J         4200         J         4200           35000         J         31000         J         33000         J         33000         J         13000           21000         J         16000         J         15000         J         17000         J         15000           2.5         R         2.5         R         1.3         R         1.3         R         1.3 | 7.2       J       11       J       2.5       J       3.3       J       7.5       J         550       J       980       J       570       J       630       J       690       J         200       U       200       U       200       U       200       U       200       U         0.53       0.42       0.2       0.73       0.2       0.2         0.4       0.45       0.18       0.58       0.15       0.1         2.5       R       2.5       R       1.3       R       1.3       R         3700       J       4000       J       3700       J       4200       J       4200       J         35000       J       31000       J       33000       J       33000       J       13000       J         21000       J       16000       J       15000       J       1700       J       15000       J         2.5       R       2.5       R       1.3       R       1.3       R | 7.2         J         11         J         2.5         J         3.3         J         7.5         J         6.3           550         J         980         J         570         J         630         J         690         J         684           200         U         200         1         6.3         6.416         6.58         0.15         0.352         2.5         8         2.5         R         1.3         33000         J         4200         J         4200         J         3960           35000         J         31000 | 7.2       J       11       J       2.5       J       3.3       J       7.5       J       6.3       6,300         550       J       980       J       570       J       630       J       690       J       684       684,000         200       U       200       U       200       U       200       U       200       U          0.53       0.42       0.2       0.73       0.2       0.16       416         0.4       0.45       0.18       0.58       0.15       0.352       352         2.5       R       2.5       R       1.3       R       1.3       R       1.3       R          3700       J       4000       J       3700       J       4200       J       3960       3,960,000         35000       J       31000       J       33000       J       13000       J       29000       29,000,000         21000       J       16000       J       15000       J       17000       J       15000       J       16800       16,800,000         2.5       R       2.5       R       1.3       R | 7.2       J       11       J       2.5       J       3.3       J       7.5       J       6.3       6,300       0.01575         550       J       980       J       570       J       630       J       690       J       684       684,000       1.71         200       U       200       U       200       U       200       U       200            0.53       0.42       0.2       0.73       0.2       0.416       416       0.00104         0.4       0.45       0.18       0.58       0.15       0.352       352       0.00088         2.5       R       2.5       R       1.3       R       1.3       R           3700       J       4000       J       3700       J       4200       J       3960       3,960,000       9.9         35000       J       31000       J       33000       J       13000       J       29,000,000       72.5         21000       J       16000       J       15000       J       15000       J       16800       16,800,000       42         2.5 |

B - compound was found in the blank and sample

CMC = criterion maximum concentration

F1 -MS and/or MSD Recovery is outside acceptance limits.

H - sample was prepped or analyzed beyond the specified holding time

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

mg/L - miligrams per liter

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

ug/L - micrograms per liter

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

X - surrogate is outside the control limits

 $\ast$  - LCS or LCSD is outside acceptance limits or the RPD  $% 10^{-1}$  exceeds the control limits.

^ - instrument related QC is outside acceptance limits

-- - not applicable

1 Estimated dilution of waste based on CH2M Hill (1997) plume dilution model results which showed a 1:400,000 minmum dilution at the edge of the disposal zone.

2 Metals concentrations for criteria are based on dissolved metals concentrations; sample metals concentrations were total (particulate and dissolved) metals concentrations.

3 Total Nitrogen and Total Phosphorous WQC are based on the American Samoa Water Quality Standards 2013 Revision, Administrative Rule No. 001-2013

4 USEPA, 2016. National Recommended Water Quality Criteria - Aquatic Life Criteria Table. Updated Dec. 22, 2016. Available at: https://19january2017snapshot.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table\_.html#table.

| l Water |       |
|---------|-------|
|         | teria |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |
|         |       |

#### Table 3: Combined Ocean Disposal Wastewater Quality Comparison Table

| Parameter                     | Units | June 2019 Sampling<br>Event - Average | June 2019 Sampling<br>Event - Maximum | November 2018<br>Sampling Event -<br>Average | November 2018<br>Sampling Event -<br>Maximum | 2010 Ocean Disposal<br>Data - Average | 2010 Ocean Disposal<br>Data - Maximum | 1990 - 1993 Ocean<br>Disposal Data -<br>Average |  |
|-------------------------------|-------|---------------------------------------|---------------------------------------|--|--|---------------------------------------|---------------------------------------|---|--|
| Aluminum                      | mg/L  | 424                                   | 740                                   | 394  | #REF!  | -                                     | -                                     | #REF!   |  |
| Ammonia (as N)                | mg/L  | 2,100                                 | 2,400                                 | 1,140  | #REF!  | 3,765                                 | 5,100                                 | -   |  |
| Ammonia (as NH <sub>3</sub> ) | mg/L  | 2,560                                 | 3,000                                 | 1,384  | #REF!  | -                                     | -                                     | -   |  |
| Cadmium                       | mg/L  | 0.17                                  | 0.37                                  | 0.137  | #REF!  | -                                     | -                                     | #REF!   |  |
| Chemical Oxygen Demand        | mg/L  | 55,000                                | 74,000                                | 56,570                                       | #REF!  | -                                     | -                                     | -   |  |
| Chromium                      | mg/L  | 0.161                                 | 0.270                                 | 0.096  | #REF!  | -                                     | -                                     | #REF!   |  |
| Copper                        | mg/L  | 0.414                                 | 0.860                                 | 0.167  | #REF!  | -                                     | -                                     | #REF!   |  |
| Oil and Grease (HEM)          | mg/L  | 2,706                                 | 7,090                                 | 4,407  | #REF!  | 4,787                                 | 5,530                                 | -   |  |
| Lead                          | mg/L  | -                                     | -                                     | 0.0273                                       | #REF!  | -                                     | -                                     | #REF!   |  |
| Mercury                       | mg/L  | 0.00388                               | 0.0046                                | 0.0015                                       | #REF!  | -                                     | -                                     | #REF!   |  |
| Nickel                        | mg/L  | 0.08                                  | 0.14                                  | 0.0449                                       | #REF!  | -                                     | -                                     | #REF!   |  |
| Nitrogen, Total               | mg/L  | 3,960                                 | 4,200                                 | 3,284  | #REF!  | 4,549                                 | 5,100                                 | -   |  |
| Phosphorus, Total             | mg/L  | 684                                   | 980                                   | 506  | #REF!  | 705                                   | 850                                   | -   |  |
| Total Kjeldahl Nitrogen       | mg/L  | 3,960                                 | 4,200                                 | 3,266  | #REF!  | -                                     | -                                     | -   |  |
| Total Solids                  | mg/L  | 29,000                                | 35,000                                | 29,645                                       | #REF!  | 38,071                                | 48,136                                | -   |  |
| Total Suspended Solids        | mg/L  | -                                     |                                       | 18,115                                       | #REF!  | -                                     |                                       | -   |  |
| Total Volatile Solids         | mg/L  | 16,800                                | 21,000                                | 18,161                                       | #REF!  | 21,437                                | 35,367                                | -   |  |

Notes:

1990 - 1993 data is from reports submitted by StarKist Samoa to the US EPA on July 29, 1993 in response to Special Condition 3.3.5 in the 102 special permit

2010 Ocean Disposal data is taken from 12 ocean disposal wastewater samples collected once per month in 2010

HEM - hexane extractable method

June 2019 sampling data is from June 20, 21, 25, 26, and 27

mg/L - milligrams per liter

N - nitrogen

NH3 - ammonia

November 2018 sampling data is from November 6 - 16

#### Table 4. Comparison of Average Ocean Disposal Stream Sample Chemistry (Undiluted and Diluted) to Toxicity Effects Concentrations in the Literature<sup>1</sup>

|                              | Average Ocean Diluted <sup>2</sup> Av           |   | Diluted <sup>2</sup> Average Ocean | Diluted <sup>2</sup> Average Ocean    | Diluted <sup>2</sup> Average Ocean | Diluted <sup>2</sup> Average Ocean |                                   |              |            |   |       | Effects  |  |  |           |  | Magnitude of | Magnitude of |
|------------------------------|---|---|------------------------------------|---------------------------------------|------------------------------------|------------------------------------|-----------------------------------|--------------|------------|---|-------|----------|--|--|-----------|--|--------------|--------------|
| Parameter                    | Parameter Units Disposal Stream Disposal Stream | Disposal Stream Sample<br>at Edge of Disposal |                                    | Organism Life stage                   | Effect                             | Effect Measurement                 | NOEC Range                        | LOEC Range   | EC50 Range | Fraction (T/D)<br>for Effects<br>Measured | Units | Citation | Exceedance of<br>Effects Concentration,<br>Undiluted Average OD<br>Sample  | Exceedance of<br>Effects Concentration,<br>Diluted OD Sample |           |  |              |              |
| Aluminum                     | mg/L  | 424   | 0.0106                             | Paracentrotus lividus                 | Embryo                             | Development                        | Deformation                       | 0.269        | 3.48       | -   | Т     | mg/L     | Caplat,C., R. Oral, M.L. Mahaut, A. Mao,<br>D. Barillier, M. Guida, C. Della Rocca,<br>and G. Pagano 2010<br>Ecotoxicol. Environ. Saf.73(6): 1138-<br>1143                               | 122  | 0.0003    |  |              |              |
| Ammonia as NH3               | mg/L  | 2560  | 0.064                              | Strongylocentrotus<br>purpuratus      | Embryo                             | Development                        | Deformation                       | 4.5          | -          | 7.2                                       | Т     | mg/L     | Green, D.J., Alzadjali, S., and Bay, S.<br>Toxicity of Ammonia to Pacific Purple<br>Sea Urchin (S. Purpuratus) Embryos.  | 356  | 0.0089    |  |              |              |
| Estimated Unionized Ammonia  | mg/L  | 22.05   | 0.00055125                         | Strongylocentrotus<br>purpuratus      | Embryo                             | Development                        | Deformation                       | 0.012 - 0.06 | 1          | 0.07 - 0.098                              | -     | mg/L     | Inouye et al. 2015. DMMP Clarification<br>Paper. Modifications to Ammonia and<br>Sulfide Triggers for Purging and<br>Reference Toxicant Testing for Marine<br>Bioassays. April 17, 2015. | 315  | 0.0008    |  |              |              |
| Arsenic                      | mg/L  | 0.682   | 0.00001705                         | Strongylocentrotus<br>purpuratus      | Embryo                             | Development                        | Developmental changes,<br>general |              | 0.011      | -   | Т     | mg/L     | Garman et al. 1997; Aquat.<br>Toxicol.39(3/4): 247-265   | 62   | 0.0002    |  |              |              |
| Barium                       | mg/L  | 0.1216  | 0.0000304                          | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Boron                        | mg/L  | 0.722   | 0.00001805                         | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Cadmium                      | mg/L  | 0.1696  | 0.00000424                         | Strongylocentrotus<br>purpuratus      | Embryo                             | Reproduction                       | Reproduction, general             | -            | -          | 0.5 - 0.51                                | Т     | mg/L     | Bailey et al. 1995;. Environ. Toxicol.<br>Chem.14(12): 2181-2186   | 0.3  | 0.0000008 |  |              |              |
| Chromium                     | mg/L  | 0.1606  | 0.000004015                        | Heliocidaris tuberculata <sup>3</sup> | Zygote                             | Development                        | Normal                            | 0.46         | -          | 1   | Т     | mg/L     | Doyle,C.J., F. Pablo, R.P. Lim, and R.V.<br>Hyne; 2003;<br>Arch. Environ. Contam. Toxicol.44(3):<br>343-350  | 0.1606   | 0.0000004 |  |              |              |
| Copper, Total                | mg/L  | 0.414   | 0.00001035                         | Strongylocentrotus<br>purpuratus      | Embryo                             | Normal                             | Development                       |              |            | 0.0148 - 0.046                            | D     | mg/L     | Various (Ecotox Database)  | 28.0   | 0.0001    |  |              |              |
| copper, rotai                | mg/L  | 0.414   | 0.00001035                         | Strongylocentrotus<br>purpuratus      | Embryo                             | Normal                             | Development                       |              |            | 0.011 - 0.035                             | Т     | mg/L     | Rivera-Duart et al. 2005; Environ. Sci.<br>Technol.39(6): 1542-1546  | 37.6   | 0.0001    |  |              |              |
| Cyanide, Total               | mg/L  | 0.0306  | 0.000000765                        | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Formaldehyde                 | mg/L  | 0.101   | 0.000002525                        | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Magnesium                    | mg/L  | 177.4   | 0.004435                           | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Manganese                    | mg/L  | 0.18  | 0.0000045                          | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Mercury                      | mg/L  | 0.00388                                       | 0.00000097                         | Paracentrotus lividus                 | Egg/Embryo                         | Development                        | Developmental changes,<br>general | 0.0027       | 0.027      | 0.0078 - 0.017                            | Т     | mg/L     | Various (Ecotox Database)  | 0.50   | 0.0000012 |  |              |              |
| Nickel                       | mg/L  | 0.074   | 0.00000185                         | Strongylocentrotus<br>purpuratus      | Embryo                             | Development                        | Developmental changes,<br>general |              | 0.4        | -   | Т     | mg/L     | Garman et al. 1997; Aquat.<br>Toxicol.39(3/4): 247-265   | 0.185  | 0.0000005 |  |              |              |
| INCACE                       | mg/L  | 0.074   | 0.00000185                         | Glyptocidaris crenularis              | Embryo                             | Development                        | Developmental changes,<br>general | -            | -          | 0.806 - 2.90                              | т     | mg/L     | Various (Ecotox Database)  | 0.099  | 0.0000002 |  |              |              |
| Phenolics, Total Recoverable | mg/L  | 6.3   | 0.0001575                          | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Selenium                     | mg/L  | 0.416   | 0.0000104                          | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Titanium                     | mg/L  | 0.352   | 0.0000088                          | ND                                    | ND                                 | ND                                 | ND                                | ND           | ND         | ND  |       | ND       | ND   | NA   | NA        |  |              |              |
| Zinc                         | mg/L  | 23.4  | 0.000585                           | Strongylocentrotus<br>purpuratus      | Embryo                             | Development                        | Developmental changes,<br>general | -            |            | 0.023 - 0.14                              | т     | mg/L     | Various (Ecotox Database)  | 1017   | 0.003     |  |              |              |

Notes 1 Samples with detected concentrations shown. 2 Estimated dilution of wase based on CH2M Hill (1997) plume dilution model results which showed a 1-400,000 minmum dilution at the edge of the disposal zone. 3 Data from only the most sensitive urchin species (to chromium) in the Ecotox Database is shown. D = Dissolved

B = D solution of the EC50 was greater than 1. T = Total

USEPA 2019. ECOTOX Knowledgebase. Updated June 13, 2019. Available online at: https://cfpub.epa.gov/ecotox/

# APPENDIX A Enthalpy Environmental Final Toxicity Report July 2019



# Toxicity Testing Results StarKist Samoa

# Ocean Disposal Streams Sample

Monitoring Period: June 2019

Prepared for: Geosyntec Consultants 920 SW Sixth Street, Suite 600 Portland, OR 97204

Project Manager: Keith Kroeger

Submitted: July 24, 2019

Data Quality Assurance:

**Results verified by:** 

- EA/Nautilus Environmental is accredited in accordance with NELAP by the State of Oregon Environmental Laboratory Accreditation Program (ORELAP ID 4053). It is also certified by the State of California Water Resources Control Board Environmental Laboratory Accreditation Program (Certificate No. 1802) and the State of Washington Department of Ecology (Lab ID C552).
- o All data have been reviewed and verified.
- All test results have met minimum test acceptability criteria under their respective EPA protocols, unless otherwise noted in this report.
- o All test results have met internal Quality Assurance Program requirements.

Peter Arth, Laboratory Director

California 4340 Vandever Avenue San Diego, California 92120 858.587.7333 fax: 858.587.3961

## INTRODUCTION

A series of marine bioassay tests using a vertebrate (*Menidia beryllina*), a crustacean (*Americamysis bahia*), and an echinoderm larva (*Strongylocentrotus purpuratus*) was performed on a sample collected from the StarKist Samoa facility. Testing was conducted as part of a program to establish the toxicity thresholds of a waste stream for potential open ocean disposal. Tests were performed at the Enthalpy Analytical (formerly Nautilus Environmental) laboratory located in San Diego, California between July 1 and 5, 2019.

#### MATERIALS AND METHODS

#### **Test Material**

The sample used for test initiations was collected on June 28, 2019. Collection was conducted under the direction of Geosyntec Consultants, and the sample was shipped to Enthalpy via a transportation and delivery service. Upon arrival at Enthalpy, an aliquot was drawn from the sample to measure temperature, pH, dissolved oxygen (DO), salinity, alkalinity, and total ammonia. Testing was initiated the day the samples were received, and the remaining sample volume was stored in the dark at 4°C until used for renewals. A summary of the sample receipt information is provided in Table 1 below. Copies of the sample check in sheet and chain of custody (COC) form are presented in Appendices A and B, respectively.

| Sample ID                            | Ocean Disposal (OD) Streams    |
|--------------------------------------|--------------------------------|
| Nautilus Log-in No.                  | 19-0711                        |
| Collection Date, Time                | 6/28/2019, 1022 (Pacific Time) |
| Receipt Date, Time                   | 7/1/2019, 0835 (Pacific Time)  |
| Receipt Temperature (°C)             | 6.8                            |
| Dissolved Oxygen (mg/L)              | 0.9                            |
| pH (units)                           | 6.11                           |
| Salinity (ppt)                       | 18.8                           |
| Alkalinity (mg/L CaCO <sub>3</sub> ) | 2,420                          |
| Total Chlorine (mg/L)                | NM <sup>a</sup>                |
| Total Ammonia (mg/L)                 | 2446                           |
| Unionized ammonia (mg/L)             | 0.42                           |

#### Table 1. Sample Information

<sup>a</sup> NM = Not Measured. Due to the dark color and turbidity of the sample, measurement for total chlorine could not be taken via standard colorimetric methods used in the laboratory.

## Test Methods

Chronic toxicity testing was conducted according to USEPA (1995). Acute toxicity testing was conducted according to procedures presented by USEPA (2002).

#### Inland Silverside Acute Toxicity Test Specifications

| Statistical Analysis Software: | CETIS™, version 1.8.7.20  |
|--------------------------------|---|
| Protocol Used:                 | USEPA/821/R-02/012, 2002 Acute Manual                                   |
| Test Acceptability Criteria:   | Lab control mean survival ≥ 90 percent                                  |
| Test Concentrations:           | 2, 1, 0.5, 0.25, 0.125, and 0.06 percent sample, and laboratory control |
| Control Water:                 | Natural seawater (Scripps Institution of Oceanography intake)           |
| Test Organism Source; Age:     | Aquatic Biosystems, Inc. (Fort Collins, CO); 12 days                    |
| Test Organism:                 | Menidia beryllina (inland silverside)                                   |
| Test Period:                   | 7/1/2019, 1235 to 7/5/2019, 1330  |

Note: Due to poor fitness of available Pacific Topsmelt cultures, the Inland Silverside was used as the vertebrate for acute testing.

## Mysid Shrimp Acute Toxicity Test Specifications

| Test Period:                   | 7/1/2019, 1215 to 7/5/2019, 1315  |
|--------------------------------|---|
| Test Organism:                 | Americamysis bahia (mysid shrimp)                                       |
| Test Organism Source; Age:     | Aquatic Biosystems, Inc. (Fort Collins, CO); 5 days                     |
| Control Water:                 | Natural seawater (Scripps Institution of Oceanography intake)           |
| Test Concentrations:           | 2, 1, 0.5, 0.25, 0.125, and 0.06 percent sample, and laboratory control |
| Test Acceptability Criteria:   | Lab control mean survival ≥ 90 percent                                  |
| Protocol Used:                 | USEPA/821/R-02/012, 2002 Acute Manual                                   |
| Statistical Analysis Software: | CETIS™, version 1.8.7.20  |

## Urchin Development Chronic Toxicity Test Specifications

| Test Period:                   | 7/1/2019, 1015 to 7/4/2019, 1035   |
|--------------------------------|--|
| Test Organism:                 | Strongylocentrotus purpuratus (purple urchin)  |
| Test Organism Source; Age:     | Adult brood stock collected off Point Loma in San Diego, CA  |
| Control Water:                 | Natural seawater (Scripps Institution of Oceanography intake)  |
| Test Concentrations:           | 2, 1, 0.5, 0.25, 0.125, and 0.06 percent sample, and laboratory control  |
| Test Acceptability Criteria:   | Mean control normal development of $\ge$ 80 percent; Percent Minimum Statistical Difference (PMSD) for development rate $\le$ 25 |
| Protocol Used:                 | USEPA/600/R-95/136, 1995 West Coast Marine Chronic   |
| Statistical Analysis Software: | CETIS™, version 1.8.7.20   |

All statistical endpoints reported were calculated using the Comprehensive Environmental Toxicity

Information System<sup>M</sup> (CETIS) by Tidepool Scientific Software according to flowchart specifications provided in USEPA method guidance. Organism performance in the sample was compared to performance observed in the concurrent laboratory control exposures. A No Observed Effect Concentration (NOEC), Lowest Observed Effect Concentration (LOEC), and 50 percent effect concentrations (EC/LC<sub>50</sub>), were calculated for all tests.

#### **RESULTS AND DISCUSSION**

There was complete mortality at 96 hours in the 2 percent concentration of the inland silverside test. None of the other concentration resulted in statistically significant reduction in fish survival, resulting in a NOEC of 1 percent sample.

Complete mortality was also observed in the 2 percent sample concentration of the mysid shrimp test. Reduced mean survival was also observed for mysids exposed to the 0.25, 0.5, and 1 percent sample concentrations; only the 0.5 percent sample concentration resulted in a statistically significant effect. However, there was a 42 percent effect from control in the 1 percent sample, and the lack of significance was due to the relatively high variability within the test concentrations. Based on the test data and guidance in USEPA 2000, the NOEC is reported as 0.25 percent sample. Additional discussion is provided below Tables 2 and 3.

The urchin test resulted in significant adverse effects to development in all concentrations tested, and the NOEC is reported as less than 0.06 percent sample. A summary of statistical results for the acute and chronic bioassays is presented in Table 2. Detailed test results for the bioassays are presented in Table 3. Raw data and statistical analyses are presented in full in Appendix C.

| Species & Test Endpoint | NOEC<br>(% sample) | LOEC<br>(% sample) | LC₅₀/ EC₅₀<br>(% sample) | Toxic Units<br>(TU₄/TU₅) |
|-------------------------|--------------------|--------------------|--------------------------|--------------------------|
| Inland Silverside       |                    |                    |                          |                          |
| 96-hr Acute Survival    | 1                  | 2                  | 1.41                     | 70.9                     |
| Mysid Shrimp            |                    |                    |                          |                          |
| 96-hr Acute Survival    | 0.25               | 0.5                | 0.49                     | 204                      |
| Purple Urchin           |                    |                    |                          |                          |
| Chronic Development     | <0.06              | 0.06               | 0.04                     | >1667                    |

NOEC = The highest Concentration tested that caused No Observed Effect to the test organisms

LOEC = The Lowest Observed Effect Concentration

LC<sub>50</sub>/EC<sub>50</sub> value = the sample concentration that is estimated to cause a lethal or adverse effect to 50% of the test organisms

TU<sub>a</sub> = Acute Toxic Units (TU<sub>a</sub>): 100 ÷ LC<sub>50</sub>

TU<sub>c</sub> = Chronic Toxic Units (TU<sub>c</sub>): 100 ÷ NOEC

|                                  | Inland Silverside                              | Mysid Shrimp | Purple Urchin                                |
|----------------------------------|--|--------------|--|
| Test Concentration<br>(% sample) | Mean Percent Mean Percent<br>Survival Survival |              | Mean Percent<br>Normal Larval<br>Development |
| Lab Control                      | 100  | 95.0         | 98.8   |
| 0.06                             | 100  | 100          | 15.4*  |
| 0.125                            | 100  | 95.0         | 0.00*  |
| 0.25                             | 100  | 80.0         | 0.00*  |
| 0.5                              | 100  | 40.0*        | 0.00*  |
| 1                                | 85.0   | 55.0         | 0.00*  |
| 2                                | 0.00*  | 0.00*        | 0.00*  |

#### Table 3. Summary of Toxicity Test Results

\*An asterisk indicates a statistically significant decrease compared to the lab control

While a toxicity identification evaluation (TIE) would be necessary to determine the exact cause of the toxicity observed to the various species, it was noted that ammonia levels in the sample were elevated. Subsamples were collected from each of the three bioassays upon initiation and at termination for each test, with one exception (no ammonia subsample was collected for urchin development test at test termination due to technician error). Additional subsamples were collected for the mysid and inland silverside tests at 48 hours, prior to the test solution renewal. The subsamples were collected from the highest test concentration (2 percent sample) for each of the bioassays. If complete mortality in the highest concentration had occurred, then the concentration below was subsampled. Total ammonia in the 2 percent sample concentration ranged from 49.7 to 51.4 mg/L at the initiation of the bioassays.

Generally, the ammonia levels remained stable throughout the testing period. At the termination of the mysid test, subsamples were collected from two individual replicates in the 1 percent sample concentration (complete mortality had occurred in the 2 percent sample by 48 hours), one with complete survival, and one with no survival. Total ammonia measurements were within 10 percent of each other (23.5 mg/L in the replicate with no survival, 24.9 mg/L in the replicate with no mortality), suggesting that for this species, ammonia may not be the primary or sole driver of toxicity. However, ammonia may have contributed to the observed effects.

Relatively high variability in test replicate response was observed in some test concentrations. This was most apparent in the mysid and urchin tests. All test solutions were thoroughly homogenized prior to making test dilutions as well as prior to distribution to the individual test chambers. However, it was noted at sample receipt that the sample had a large portion of heavy particulate matter that settled quickly. In the higher concentrations (specifically the 0.5 and 1 percent sample) of the mysid test, some replicates had complete survival while others had complete mortality. In the urchin test, some replicates of the 0.06 percent concentration showed a partial response (i.e some normally developed embryos), while other replicates showed no normally developed embryos. The inter-concentration

variability combined with the bench observations suggest that at least a portion of the toxicity may be associated with particulate matter in the sample.

# QUALITY ASSURANCE

The samples were received slightly above the temperature range of 0-6 °C (6.8 °C at receipt). All tests were initiated within 98-hours of when the sample was collected. The laboratory controls met all minimum test acceptability requirements. Statistical analyses followed standard USEPA flowchart selections. The PMSD value for the urchin test was within the acceptable range. The data are deemed reliable for reporting purposes.

Due to the heavy debris and dark coloration of the sample, some mortality observations were unable to be collected at 24 and 72 hours. During the 48-hour renewal for the acute tests and at termination, mortality was evaluated in all test replicates.

Due to aeration of the test replicates, salinity in the mysid test exceeded the recommended range of +/-2ppt from the control salinity of 34 ppt. The salinity only slightly exceeded this threshold and did so in test concentrations which resulted in complete survival, suggesting that the increased salinity was unlikely to cause adverse effects to the test organisms.

The dissolved oxygen (DO) in the sample was below 1.0 mg/L at receipt. Due to the low sample concentrations tested, the sample was not aerated prior to addition to the control water to create the test solutions. When initial water quality measurements were collected prior to the addition of the test organisms, all DO levels were above 7.0 mg/L, well within the allowable range for the tests. Approximately 3 hours later, DO was measured in the highest test concentration of all three bioassays. The mysid and inland silverside test DO levels had fallen below 5 mg/L, indicating that overnight the DO levels would have fallen below the 4.0 mg/L warning level. Therefore, within 4 hours of test initiation all test replicates for the mysid and inland silverside bioassays were put on continuous, aeration for the duration of the test period. All concentrations of the mysid test stayed above 4.0 mg/L throughout the test.

Despite the constant aeration, water quality measurements at 24 hours into the test showed the DO concentrations in the inland silverside test fell to 0.7 and 1 mg/L in the 2 and 1 percent sample concentrations, respectively. The reason the DO fell in the inland silverside test and not the mysid test (despite having the same test temperature, test chamber size, and test solution volume) is likely due to the loading difference, with the fish having a higher mass and thus higher oxygen demand relative to the mysid. While it is not possible to make a definitive conclusion on the impact of the reduced DO concentrations with regard to the observed mortality in the fish test, the fact that the DO fell to 1.0 mg/L in the 1 percent sample concentration and still resulted in 85 percent mean survival suggests that DO was not likely to have a substantial contribution to the observed mortality in the 2 percent sample.

A drop in DO was also observed in the larval development test. This test was not aerated throughout the duration due to the possible interference it would create with the test organisms. The drop in DO for the larval development test was observed at 48 hours, as opposed to the fish and mysid test which

was noticed immediately. This is likely due to the larval development test being conducted at 15 °C as opposed to 25 °C for the fish and mysid. At 48 hours the DO in the larval development test fell below 4.0 mg/L in all but the 0.125 and 0.06 percent sample concentrations. However, toxicity was observed in both of those concentrations, suggesting that the effects observed in the higher test concentrations with the low dissolved oxygen were likely not associated with the low DO.

## Reference Toxicant Testing

Concurrent reference toxicant tests met all minimum test acceptability requirements and the PMSD value for the chronic urchin development test was within the acceptable range. The calculated median effect concentration values for all reference toxicant tests were within two standard deviations of the historical means, indicating typical organism sensitivity to copper. Reference toxicant test results are summarized in Table 5 and are presented in full in Appendix D. A list of laboratory qualifier codes used for data recording can be found in Appendix E.

| Species & Test Endpoint | EC₅₀<br>(µg/L copper) | Historical mean ± 2 SD<br>(µg/L copper) | CV<br>(%) |
|-------------------------|-----------------------|---|-----------|
| Inland Silverside       |                       |   |           |
| 96-hr Acute Survival    | 224                   | 198 ± 80.3                              | 20.3      |
| Mysid Shrimp            |                       |   |           |
| 96-hr Acute Survival    | 230                   | 273 ± 140                               | 25.6      |
| Purple Urchin           |                       |   |           |
| Larval Development      | 10.9                  | $14.0 \pm 7.00$                         | 25.0      |

 Table 5. Summary of Reference Toxicant Test Results

EC<sub>50</sub> = The concentration expected to cause an adverse effect to 50 percent of the test organisms

Historical Mean = The mean  $EC_{50}$  from the laboratory's previous 20 tests, plus or minus two standard deviations (SD) CV = Coefficient of Variation

# REFERENCES

- Tidepool Scientific Software. 2000-2013. CETIS Comprehensive Environmental Toxicity Information System Software, Version 1.8.7.20.
- USEPA. 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. United States Environmental Protection Agency Office of Wastewater Management (EPA-833-R-00-003).
- USEPA. 1995. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136.
- USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. EPA/821/R-02/012, October 2002.

Appendix A Sample Information

Sample Check-In Information

| Nautilus Environmental |
|------------------------|
| 4340 Vandever Avenue   |
| San Diego, CA 92120    |

.

| 60              | syntec7  | C        |               |             |
|-----------------|----------|----------|---------------|-------------|
| Client:         | 100-     | (Jeosy   | nlec          | Consultanto |
| Sample ID:      | Starkist | Samoa Co | -00           | Streams     |
| Test ID No(s).: | 1907 -   | 5077-1   | <u>302 01</u> | 3           |

| 5083                                  | Sample Description:                     |            |                |             |
|---------------------------------------|---|------------|----------------|-------------|
|                                       | Park Brown, Opiq                        | ue, Strong | , odor, 1      | teary debis |
|                                       | <u> </u>                                | 7          | //             |             |
|                                       |   |            |                |             |
|                                       |   |            |                |             |
|                                       | · · · · · · · · · · · · · · · · · · ·   |            |                |             |
|                                       | COC Complete (Y/N)                      | ?          |                |             |
|                                       | А <u>//</u> В С                         |            |                |             |
|                                       | â                                       |            |                |             |
|                                       | Filtration? Y (N                        | ) ,        |                |             |
|                                       | Pore Size:                              | /          |                |             |
| Y N                                   | Organisms                               | or         | Debris         |             |
|                                       | Organishis                              | 01         | Debils         |             |
|                                       |   |            |                |             |
|                                       | Salinity Adjustment?                    | YN         |                |             |
| · · · · · · · · · · · · · · · · · · · | Test:                                   | Source:    | Targe          | et ppt:     |
|                                       | Test:                                   | Source:    | Targe          | et ppt:     |
|                                       | Test:                                   | Source:    | Targe          | et ppt:     |
|                                       | pH Adjustment? Y                        | N)         |                |             |
|                                       |   | A          | в              | С           |
|                                       | Initial pH:                             |            |                |             |
|                                       | Amount of HCI added:                    |            |                |             |
|                                       | Amount of HCI added.                    | ·          |                |             |
| Other:                                | Final pH:                               | ~          |                |             |
| T.                                    | Cl <sub>2</sub> Adjustment? Y           | (N)        |                |             |
| Salinity:                             |   | Α          | В              | C           |
|                                       | Initial Free Cl <sub>2</sub> :          |            |                |             |
| Other:                                | STS added:                              |            |                |             |
|                                       | Final Free Cl <sub>2</sub> :            |            |                |             |
| Salinity:                             |   |            |                |             |
|                                       | Sample Aeration? Y                      | Ń          |                |             |
| Other:                                | ·                                       | A          | в              | С           |
|                                       | Initial D.O.                            |            |                |             |
| Salinity:                             | Duration & Rate                         | 3          |                |             |
| Soundy                                | Final D.O.                              |            |                |             |
| ime.                                  | i mai D.O.                              | L          | <u> </u>       | <u>.</u>    |
|                                       |   | Sinnal Oh- | lata Dani      |             |
|                                       | Subsam <u>ples</u> for Addi<br>NH3 Othe |            | istry Require  | ed?(Y)N     |
| alue x20 = 2,420                      | Tech Initials A                         |            |                |             |
| Fue in - Gyw                          | rech initials A                         | · B        | _ C            | ( .         |
| refore analyte not M                  | TANKOd                                  | QC Ch      | eck: EG        | 7/11/19     |
| sugar an angle In In                  |   |            | A              | , -112/1a   |
| -                                     |   | Final Revi | iew: <u>FI</u> | 11-11       |

| Sample (A, B, C):   |                        |
|---|------------------------|
| Log-in No. (19-xxxx): 071/6/14/19   |                        |
| Sample Collection Date & Time: ELAT/19 + 0622-P07   | COC Com                |
| Sample Receipt Date & Time: 1/17/1/19 835   | а <u>//</u> в_         |
| Number of Containers & Container Type: 2 /L tub (5  |                        |
| Approx. Total Volume Received (L): アスレ  | Filtration             |
| Check-in Temperature (°C)   | Po                     |
| Temperature OK? <sup>1</sup> Y (N) Y N Y N Y N  | Or                     |
| DO (mg/L) 0.9   |                        |
| pH (units)  | Salinity A             |
| Conductivity (µS/cm)  | Test:                  |
| Salinity (ppt)  | Test:                  |
| Alkalinity (mg/L) <sup>2</sup> $ \lambda $  | Test:                  |
| Hardness (mg/L) <sup>2,3</sup>  | pH Adjust              |
| Total Chlorine (mg/L)   |                        |
| Technician Initials ACS   |                        |
| Acute Mysid and   | Amount of              |
| Test Performed: Meridia, Urdin Control/Dilution Water: 8:2 / Lab SW / Lab ART Other:                            |                        |
| Development Alkalinity: 112 Hardness or Salinity: 34 ppt  | Cl <sub>2</sub> Adjust |
| Additional Control? Y (N) = Alkalinity: Hardness or Salinity:   |                        |
|   | Initia                 |
| Test Performed: Control/Dilution Water: 8:2 / Lab SW / Lab ART Other:   | STS a                  |
| Alkalinity: Hardness or Salinity:   | Final                  |
| Additional Control? Y N = Alkalinity: Hardness or Salinity:   |                        |
|   | Sample A               |
| Test Performed: Control/Dilution Water: 8:2 / Lab SW / Lab ART Other:   |                        |
| Alkalinity: Hardness or Salinity:   | Initia                 |
| Additional Control? Y N = Alkalinity: Hardness or Salinity:   |                        |
| Notes: <sup>1</sup> Temperature of sample should be 0-6°C, if received more than 24 hours past collection time. | Final                  |
| $^{2}$ mg/L as CaCO3, $^{3}$ Measured for freshwater samples only, NA = Not Applicable                          | Subcomp                |
|   | Subsamp                |
| Additional Comments 12 Reve Ars 7/1/19 (C) 1:19 Silution prior to analysis weosured value x20 = 21              | 120 Teo                |
|   | <u>.</u>               |

@ Unable to zero colorimeter due to dark where of sample, therefore analyte not MAS @Engis 7/1/9 (E) Q16 5-8/15/19

### **Overlying Water**

## **Total Ammonia Analysis**

| -Freshwater ŵ'r r  |                  |                    |            |                 |                   |               |
|--|------------------|--------------------|------------|-----------------|-------------------|---------------|
| DC-001 7124/19   |                  |                    |            |                 |                   |               |
|  | ent: Geosyntec/  |                    |            |                 |                   | _             |
| Proj   | ect: Starkist-Am | ierican Samoa      | 1          |                 |                   |               |
| Test Ty  | pe: Acute My     | psid, Alu          | te Menidie | a, unhan        | Developn          | nent          |
|  | ank: 0,0         |                    |            | Analyst         | : NM              |               |
| Test Start D   | ate: 7/1/19      |                    | An         | alysis Date     | : 7/24/19         | <u> </u>      |
|  |                  |                    |            |                 | N x 1.22          |               |
| Sample ID  | Nautilus<br>ID   | Sub-Sample<br>Date | Day        | NH3-N<br>(mg/L) | Ammonia<br>(mg/L) |               |
| Blank Spike (10 mg/L NH <sub>3</sub> )                                 |                  | NA                 | 2 3 TONINA | 7.1             | 8.7               |               |
| Starkist- American Samoa   |                  | 7/1/19             | 7419/7/11  | 40.1            | 48.9              | x 50 = 2446,1 |
|  |                  |                    |            |                 |                   | -             |
|  |                  |                    |            |                 |                   |               |
|  |                  |                    |            |                 |                   |               |
|  |                  |                    |            |                 |                   | -             |
|  |                  |                    |            |                 |                   | -             |
|  |                  |                    |            |                 |                   | -             |
|  |                  |                    |            |                 |                   |               |
| Spike Check (10 mg/L NH <sub>3</sub> )                                 |                  | NA                 | NA         | 7.0             | 8.5               |               |
|  |                  |                    |            |                 |                   |               |
|  |                  |                    |            |                 |                   | -             |
|  |                  |                    |            |                 |                   | -             |
|  |                  |                    |            |                 |                   | -             |
|  |                  |                    |            |                 |                   |               |
|  |                  |                    |            |                 |                   |               |
|  |                  |                    |            |                 |                   |               |
|  |                  |                    |            |                 |                   | _             |
|  |                  |                    |            | 200             | 117 6             | x 50=2372,9   |
| Sample Duplicate <sup>a</sup><br>Sample Duplicate + Spike <sup>a</sup> |                  | NA                 | NA         | 38.9            | 47.5              | x = 2946.3    |
| Spike Check (10 mg/L NH <sub>3</sub> )                                 |                  | NA                 | NA         | 7.0             | 8,5               | 100-21103     |
| ability and an ( to high third)  |                  |                    |            | 1.0             | 013               |               |

<u>Relative Percent Difference (RPD) = [sample] (mg/L) - [sample duplicate] (mg/L)</u> x 100 [average ammonia] (mg/L) Acceptable Range: 0-20%

Percent Recovery = [spiked sample] (mg/L) - [sample] (mg/L) x 100 nominal [spike] (mg/L) Acceptable Range: 80-120%<sup>b</sup>

| QC Sample ID | [NH <sub>3</sub> ] | [Sample Dup] | Measured<br>[Spike] | Nominal<br>[Spike] | RPD    | % Recovery |
|--------------|--------------------|--------------|---------------------|--------------------|--------|------------|
| Blank        | 0.0                | NA           | 87                  | 10                 | NA     | 87         |
| Stanfelst    | 48.9               | 47.5         | 589                 | 10                 | Q,82.9 | 100        |

Comments:

Notes: <sup>a</sup>Unless otherwise noted, the last sample listed on the datasheet is used for duplicate and duplicate + spike QC check.

<sup>b</sup> Acceptable range for % recovery applies only to the blank spike. Spike recoveries in samples may vary based on sample matrix and are for information only.

ObTP 218 7/24/19

<sup>c</sup> Calculation not performed due to one or both values below the method detection limit.

Method Detection Limit = 0.5 mg/L

7/24/19 Л QC Check:

0

Enthalpy Analytical. 4340 Vandever Avenue. San Diego, CA 92120.

# Unionized Ammonia Calculation

| Client:    | Geosyntec         |  |
|------------|-------------------|--|
| Test Type: | Sample receipt    |  |
| Test ID:   | 1907-S077 to S079 |  |
| Test Date: | 7/1/2019          |  |

| Sample ID  | Test Day | Sample Type | Actual<br>Total Ammonia (mg/L) | Temp (C) | Salinity (ppt) | pH   | Temp (K) | I       | I Rounded | pК   | Unionized<br>Ammonia (mg/L) |
|------------|----------|-------------|--------------------------------|----------|----------------|------|----------|---------|-----------|------|-----------------------------|
| OD Streams | 0        | water       | 2446                           | 6.8      | 18.8           | 6.11 | 279.96   | 4.31849 | 4         | 9.29 | 0.420                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|            |          |             |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |

Note: Water quality parameters reflect values at sample check-m.

Appendix B Chain-of-Custody Information

| 4340 Vandever Avenue<br>San Diego, CA 92120<br>Phone 858.587.7333<br>infoSD@enthalpy.com |  |                                     |        |                  |                                   |  | · · · .                                  | 9  |                                       |                                |                         |        | ate 6   | Chain of Custo   |
|--|--|-------------------------------------|--------|------------------|-----------------------------------|--|--|--|---------------------------------------|--------------------------------|-------------------------|--------|---------|--|
| Sample Collection By:  |  |                                     |        |                  |                                   |  |  |  |                                       |                                | A                       |        | -       | Page / of  |
| Report to:<br>Company<br>Address<br>City/State/Zip<br>Contact<br>Phone<br>Email          | 920 SW<br>Portlan<br>Keith K<br>971-27 | V Sixth<br>d, OR<br>roeger<br>1-590 |        | 500<br>          | -                                 | Invoice To:<br>Company<br>Address<br>City/State<br>Contact<br>Phone<br>Email | ÷.,                                      | Same as Report to                                | Survival (A. affinis or M. beryllina) | burchin Larval Development (S. | val ( <i>A. bahia</i> ) | ,      |         | Nautilus Matrix Codes: <u>G</u> = Grab <u>C</u> = Composite <u>FW</u> = Freshwater <u>SW</u> = Seawater <u>Sed</u> = Sediment <u>STRM</u> = Stormwater <u>GW</u> = Groundwater |
| SAMPLE ID  |  | · •                                 | SAMPLE |                  | MATRIX CODE                       | Contair  | her                                      |  |                                       | 72-hr Purple (                 | Ir Sur                  |        |         |  |
|  | Da                                     | te .                                | Time   | Type<br>(G or C) | (FW, SW, Sed,<br>STRM, GW, WW, O) | Туре   | Qty                                      | COMMENTS   | 96-Hour                               | 2-hr P                         | 96-Hour                 | 4      |         | <u>WW</u> = Wastewater   |
| OD Streams   | 62                                     | 510                                 | 06:22  | KC               | ww                                | cubitainer   | 21                                       |  | - m                                   | X                              | б<br>Х                  | -      | +-      | O = Other (specify)  |
|  | (6/25                                  | 0/1 7                               |        | <b>7</b> 45      | •                                 |  |  |  |                                       |                                |                         | -      |         |  |
| ¢ • *  |  |                                     | ·      | • p              |                                   |  | 4  |  |                                       |                                | 1                       | -      |         |  |
| 2  | · ·                                    | . *                                 | ,      |                  | é é                               |  | -  |  | - ·                                   |                                |                         |        |         |  |
| с, р   |  |                                     | с. ф   | 04               |                                   | p  |  |  | - 0                                   |                                |                         |        |         |  |
| PROJECT INFORMA  | TION                                   | 0                                   |        | SAM              | IPLE RECEIPT                      |  |  | 1) RELINQUISHED, BY (CLIENT)                     |                                       |                                | • •                     |        |         | 1.1.1  |
| Project Name: StarKist   | •                                      |                                     | Tol    | al No. of Co     | Pa                                | 2  | (Signature)                              | (Time)   | (Signatu                              | re)                            | 2) F                    | RECEIN | ED BY   | (COURIER)  |
| PO No.:  |  |                                     |        | ived Good        |                                   | Y .  | o<br>(Printed Nam                        | // 11:00<br>(Date)                               | (Printéd                              | Name)                          |                         | _      |         | (Date)   |
| Shipped Via:   |  |                                     | Mat    | ches Test S      | ichedule?                         | ·N   | (Company)                                | •  | (Compan                               | y) .                           | • •                     |        |         |  |
| (por email 8/15/19)  |  |                                     | -      |                  |                                   | 12 ptm   | (Signature)<br>(Printed Nam<br>(Company) | 3) RELINQUISHED BY (COURIER)<br>(Time)<br>(Date) | (Printed)<br>Am<br>Nau                | anda                           | Sage                    | r      | ) BY (L | ABORATORY)<br>(Time)<br>0835<br>(Come)<br>7//4<br>(Log-in #5)<br>[907]]  |

itional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted. Shaded areas are for lab use only Report turn-around-time varies depending on length of test; please inquire with your project manager.

http://enthalpy.com/environmental-toxicology-2/

8 \_\_\_\_\_

Appendix C Raw Data and Statistical Analysis Acute Inland Silverside

# **CETIS Summary Report**

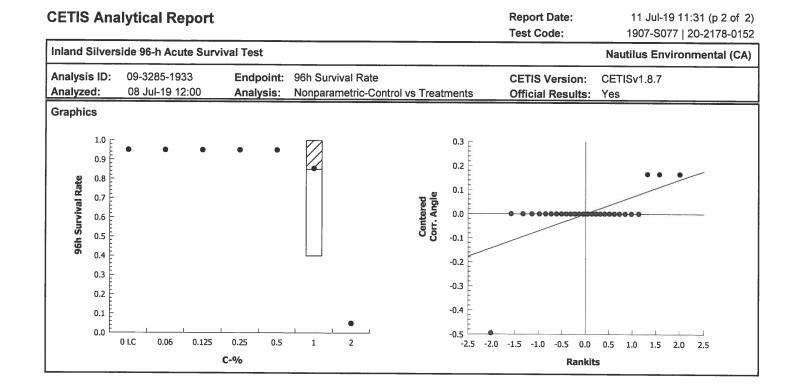
|   |  |          |  |   |           |                                       |      | 1000 00001                             |         |              | 0011120      | 2110 010   |
|---|--|----------|--|---|-----------|---------------------------------------|------|--|---------|--------------|--------------|------------|
| Inland Silvers  | ide 96-h Acute   | Survival | Test   |   |           |                                       |      |  |         | Nautilus     | s Environm   | ental (CA) |
| Batch ID:<br>Start Date:<br>Ending Date:<br>Duration: | 14-3706-7634<br>01 Jul-19 12:35<br>05 Jul-19 13:30<br>4d 1h          | 5 F      | Test Type:<br>Protocol:<br>Species:<br>Source: | Survival (96h)<br>EPA/821/R-02-<br>Menidia beryllir<br>Aquatic Biosys | na        |                                       |      | Analyst:<br>Diluent:<br>Brine:<br>Age: |         | ral Seawate  | er           |            |
| Receive Date:   | 02-7149-1510<br>27 Jun-19 10:2<br>01 Jul-19 08:35<br>34d 2h (6.8 °C) | 5 5      | Code:<br>Material:<br>Source:<br>Station:      | 19-0711<br>Effluent Sample<br>Starkist Samoa<br>OD Streams            |           |                                       |      | Client:<br>Project:                    | Geos    | syntec       |              |            |
| Comparison S  | Summary  |          |  |   |           | · · · · · · · · · · · · · · · · · · · |      |  |         |              |              |            |
| Analysis ID   | Endpoint   |          | NOEL   | LOEL  | TOEL      | PMSD                                  | τu   | Meth                                   | od      |              |              |            |
|   | 96h Survival Ra  | ate      | 1  | 2   | 1.414     | 19.3%                                 | 100  |  |         | -One Rank    | Sum Test     |            |
| Point Estimat   | e Summary  |          |  |   |           |                                       |      |  |         |              | 2            |            |
| Analysis ID   | Endpoint   |          | Level  | %   | 95% LCL   | 95% UCL                               | TU   | Meth                                   | od      |              |              |            |
| 19-2340-3418  | 96h Survival Ra  | ate      | EC25   | 1.118   | 0.5739    | 1.329                                 | 89.4 | 7 Linea                                | ar Inte | rpolation (I | CPIN)        |            |
|   |  |          | EC50   | 1.412   | 0.8984    | 1.553                                 | 70.8 |  |         |              |              |            |
| Test Acceptat   | oility   |          |  |   |           |                                       |      |  |         |              |              | *          |
| Analysis ID   | Endpoint   |          | Attrib   | ute   | Test Stat | TAC Lim                               | its  | Over                                   | lap     | Decision     |              |            |
| 09-3285-1933  | 96h Survival Ra  | ate      | Contr  | ol Resp   | 1         | 0.9 - NL                              |      | Yes                                    |         | Passes A     | cceptability | Criteria   |
| 19-2340-3418  | 96h Survival Ra  | ate      | Contro   | ol Resp   | 1         | 0.9 - NL                              |      | Yes                                    |         |              | cceptability |            |
| 96h Survival I  | Rate Summary   |          |  |   |           |                                       |      |  |         |              |              |            |
| C-%   | Control Type   | Count    | Mean   | 95% LCL   | 95% UCL   | Min                                   | Мах  | Std E                                  | Err     | Std Dev      | CV%          | %Effect    |
| 0   | Lab Control  | 4        | 1  | 1   | 1         | 1                                     | 1    | 0                                      |         | 0            | 0.0%         | 0.0%       |
| 0.06  |  | 4        | 1  | 1   | 1         | 1                                     | 1    | 0                                      |         | 0            | 0.0%         | 0.0%       |
| 0.125   |  | 4        | 1  | 1   | 1         | 1                                     | 1    | 0                                      |         | 0            | 0.0%         | 0.0%       |
| 0.25  |  | 4        | 1  | 1   | 1         | 1                                     | 1    | 0                                      |         | 0            | 0.0%         | 0.0%       |
| 0.5   |  | 4        | 1  | 1   | 1         | 1                                     | 1    | 0                                      |         | 0            | 0.0%         | 0.0%       |
| 1   |  | 4        | 0.85   | 0.3726  | 1,        | 0.4                                   | 1    | 0.15                                   |         | 0.3          | 35.29%       | 15.0%      |
| 2   |  | 4        | 0  | 0   | 0         | 0                                     | 0    | 0                                      |         | 0            |              | 100.0%     |
| 96h Survival I  | Rate Detail  |          |  |   |           |                                       |      |  |         |              |              |            |
| C-%   | Control Type   | Rep 1    | Rep 2  | Rep 3   | Rep 4     |                                       |      |  |         |              |              | Х          |
| 0   | Lab Control  | 1        | 1  | 1   | 1         |                                       |      |  |         |              |              |            |
| 0.06  |  | 1        | 1  | 1   | 1         |                                       |      |  |         |              |              |            |
| 0.125   |  | 1        | 1  | 1   | 1         |                                       |      |  |         |              |              |            |
| 0.25  |  | 1        | 1  | 1   | 1         |                                       |      |  |         |              |              |            |
| 0.5   |  | 1        | 1  | 1   | 1         |                                       |      |  |         |              |              |            |
| 1   |  | 0.4      | 1  | 1   | 1         |                                       |      |  |         |              |              |            |
| 2   |  | 0        | 0  | 0   | 0         |                                       |      |  |         |              |              |            |
| -   |  | U        | U  | v   | 0         |                                       |      |  |         |              |              |            |

06458/16/19

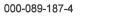
Analyst: Ja QA: Php 7/12/19

| CETIS An   | alytical Rep                      | ort  |  |  |   |      |   | -  | ort Date:<br>Code:  |   |   | 31 (p 1 of 2<br>0-2178-015  |
|--|-----------------------------------|--|--|--|---|------|---|--|---|---|---|---|
| Inland Silve   | rside 96-h Acute                  | Survival   | Test   |  |   |      |   |  |   | Nautilus  | s Environn  | nental (CA)   |
| Analysis ID:<br>Analyzed:  | 09-3285-1933<br>08 Jul-19 12:0    |  | •  | n Survival Ra<br>nparametric-  |   | vs T | reatments   |  | IS Version  |   | .8.7  |   |
| Data Transfo   | orm                               | Zeta   | Alt Hyp  | Trials   | Seed  |      |   | PMSD   | NOEL  | LOEL  | TOEL  | TU  |
| Angular (Cor   | rected)                           | NA   | C > T  | NA   | NA  |      |   | 19.3%  | 1   | 2   | 1.414   | 100   |
| Steel Many-  | One Rank Sum T                    | est  |  |  |   |      |   |  |   |   |   |   |
| Control  | vs C-%                            |  | Test Stat  | Critical   | Ties  | DF   | P-Value   | P-Type   | Decisior  | n(α:5%)   |   |   |
| Lab Control  | 0.06                              |  | 18   | 10   | 1   | 6    | 0.8333  | Asymp  |   | nificant Effect   |   |   |
|  | 0.125                             |  | 18   | 10   | 1   | 6    | 0.8333  | Asymp  | -   | nificant Effect   |   |   |
|  | 0.25                              |  | 18   | 10   | 1   | 6    | 0.8333  | Asymp  | -   | ificant Effect  |   |   |
|  | 0.5                               |  | 18   | 10   | 1   | 6    | 0.8333  | Asymp  | -   | ificant Effect  |   |   |
|  | 1                                 |  | 16   | 10   | 1   | 6    | 0.6105  | Asymp  | -   | ificant Effect  |   |   |
| ANOVA Tabl   | le                                |  |  |  |   |      |   |  |   |   |   |   |
| Source   | Sum Squ                           | lares  | Mean Sq  | uare   | DF  |      | F Stat  | P-Value  | Decision  | ı(α:5%)   |   |   |
| Between  | 0.090905                          | 09   | 0.018181   | )2   | 5   |      | 1   | 0.4457   | Non-Sign  | ificant Effect  |   |   |
| Error  | 0.327258                          | 3  | 0.018181   | 02   | 18  |      |   |  | 0   |   |   |   |
| Total  | 0.418163                          | 4  |  |  | 23  |      |   |  |   |   |   |   |
| Distribution   | al Tests                          |  |  |  |   |      |   |  |   |   |   |   |
| Attribute  | Test                              |  |  | Test Stat  | Critica   | 1    | P-Value   | Decision   | α:1%)   |   |   |   |
| Variances  |                                   |  | ity of Variance  | e 1  | 4.248   |      | 0.4457  | Equal Var  | iances  |   |   |   |
| Variances  | Levene E                          | Equality of  | Variance   | 9  | 4.248   |      | 0.0002  | Unequal \  | /ariances   |   |   |   |
| Distribution   | Shapiro-                          | Wilk W No  | ormality   | 0.4634   | 0.884   |      | <0.0001   | Non-norm   | al Distribut  | ion   |   |   |
| 96h Survival   | Rate Summary                      |  |  |  |   |      |   |  |   |   |   |   |
| C-%  | Control Type                      | Count  | Mean   | 95% LCL  | 95% U   | CL   | Median  | Min  | Max   | Std Err   | CV%   | %Effect   |
| 0  | Lab Control                       | 4  | 1  | 1  | 1   |      | 1   | 1  | 1   | 0   | 0.0%  | 0.0%  |
| 0.06   |                                   | 4  | 1  | 1  | 1   |      |   |  | 4   |   |   |   |
|  |                                   |  | •  |  |   |      | 1   | 1  | 1   | 0   | 0.0%  | 0.0%  |
| 0.125  |                                   | 4  | 1  | 1  | 1   |      | 1<br>1  | 1  | 1   | 0<br>0  |   | 0.0%<br>0.0%  |
| 0.25   |                                   | 4<br>4   | 1<br>1   | 1<br>1   | 1<br>1  |      | 1<br>1<br>1   | -  | 1<br>1<br>1   |   | 0.0%  |   |
| 0.25<br>0.5  |                                   | 4<br>4   | 1<br>1<br>1  | 1<br>1   | 1   |      | 1<br>1<br>1<br>1  | 1  | 1<br>1<br>1<br>1  | 0   | 0.0%<br>0.0%  | 0.0%  |
| 0.25<br>0.5<br>1   |                                   | 4  | 1<br>1<br>1<br>0.85  | 1  | •   |      | 1<br>1<br>1<br>1  | 1  | 1<br>1<br>1<br>1  | 0<br>0  | 0.0%<br>0.0%<br>0.0%  | 0.0%<br>0.0%  |
| 0.25<br>0.5  |                                   | 4<br>4   | 1<br>1<br>1<br>0.85<br>0                                     | 1<br>1   | 1   |      | 1<br>1<br>1<br>1<br>1<br>0  | 1<br>1<br>1  | 1<br>1<br>1<br>1<br>0   | 0<br>0<br>0   | 0.0%<br>0.0%<br>0.0%<br>0.0%  | 0.0%<br>0.0%<br>0.0%  |
| 0.25<br>0.5<br>1<br>2<br>Angular (Con                                      | rrected) Transfor                 | 4<br>4<br>4<br>4   | 0  | 1<br>1<br>0.3726   | 1<br>1  |      | 1<br>1<br>1<br>1  | 1<br>1<br>1<br>0.4   | 1<br>1  | 0<br>0<br>0<br>0.15                                       | 0.0%<br>0.0%<br>0.0%<br>0.0%  | 0.0%<br>0.0%<br>0.0%<br>15.0%   |
| 0.25<br>0.5<br>1<br>2<br>Angular (Con                                      | rrected) Transfor<br>Control Type | 4<br>4<br>4<br>4   | 0  | 1<br>1<br>0.3726   | 1<br>1<br>0   | CL   | 1<br>1<br>1<br>1  | 1<br>1<br>1<br>0.4   | 1<br>1  | 0<br>0<br>0<br>0.15                                       | 0.0%<br>0.0%<br>0.0%<br>0.0%  | 0.0%<br>0.0%<br>0.0%<br>15.0%   |
| 0.25<br>0.5<br>1<br>2<br>Angular (Con                                      | ·                                 | 4<br>4<br>4<br>4<br>med Sum  | 0<br>Imary   | 1<br>1<br>0.3726<br>0  | 1<br>1<br>0   | CL   | 1<br>1<br>1<br>1<br>0   | 1<br>1<br>1<br>0.4<br>0<br><b>Min</b>                                | 1<br>1<br>0<br>Max  | 0<br>0<br>0.15<br>0<br>Std Err                            | 0.0%<br>0.0%<br>0.0%<br>35.29%  | 0.0%<br>0.0%<br>15.0%<br>100.0%   |
| 0.25<br>0.5<br>1<br>2<br>Angular (Con<br>C-%<br>0                          | Control Type                      | 4<br>4<br>4<br>med Sum<br>Count                                    | 0<br>Imary<br>Mean   | 1<br>1<br>0.3726<br>0<br>95% LCL   | 1<br>1<br>0<br><b>95% U</b>                                     | CL   | 1<br>1<br>1<br>0<br><b>Median</b>                                     | 1<br>1<br>0.4<br>0<br><b>Min</b><br>1.345                            | 1<br>1<br>0<br><b>Max</b><br>1.345                            | 0<br>0<br>0.15<br>0<br><b>Std Err</b><br>0                | 0.0%<br>0.0%<br>0.0%<br>35.29%<br>CV%<br>0.0%                         | 0.0%<br>0.0%<br>15.0%<br>100.0%<br>%Effect<br>0.0%                        |
| 0.25<br>0.5<br>1<br>2<br>Angular (Con<br>C-%<br>0<br>0.06                  | Control Type                      | 4<br>4<br>4<br>med Sum<br>Count<br>4                               | 0<br>mary<br><u>Mean</u><br>1.345                            | 1<br>1<br>0.3726<br>0<br><b>95% LCL</b><br>1.345                         | 1<br>1<br>0<br><b>95% U</b><br>1.346                            | CL   | 1<br>1<br>1<br>0<br><b>Median</b><br>1.345<br>1.345                   | 1<br>1<br>0.4<br>0<br><b>Min</b><br>1.345<br>1.345                   | 1<br>1<br>0<br><b>Max</b><br>1.345<br>1.345                   | 0<br>0<br>0.15<br>0<br><b>Std Err</b><br>0<br>0           | 0.0%<br>0.0%<br>0.0%<br>35.29%<br>CV%<br>0.0%<br>0.0%                 | 0.0%<br>0.0%<br>15.0%<br>100.0%<br>%Effect<br>0.0%<br>0.0%                |
| 0.25<br>0.5<br>1<br>2<br>Angular (Con<br>C-%<br>0<br>0.06<br>0.125         | Control Type                      | 4<br>4<br>4<br>7<br>med Sum<br>Count<br>4<br>4                     | 0<br>mary<br>Mean<br>1.345<br>1.345                          | 1<br>0.3726<br>0<br>95% LCL<br>1.345<br>1.345                            | 1<br>1<br>0<br><b>95% U</b><br>1.346<br>1.346                   | CL   | 1<br>1<br>1<br>0<br><b>Median</b><br>1.345<br>1.345<br>1.345          | 1<br>1<br>0.4<br>0<br><b>Min</b><br>1.345<br>1.345<br>1.345          | 1<br>1<br>0<br><b>Max</b><br>1.345<br>1.345<br>1.345          | 0<br>0<br>0.15<br>0<br><b>Std Err</b><br>0<br>0<br>0      | 0.0%<br>0.0%<br>0.0%<br>35.29%<br>CV%<br>0.0%<br>0.0%<br>0.0%         | 0.0%<br>0.0%<br>15.0%<br>100.0%<br><b>%Effect</b><br>0.0%<br>0.0%         |
| 0.25<br>0.5<br>1<br>2<br>Angular (Con<br>C-%<br>0<br>0.06<br>0.125<br>0.25 | Control Type                      | 4<br>4<br>4<br><b>rmed Sum</b><br><u>Count</u><br>4<br>4<br>4      | 0<br>Mean<br>1.345<br>1.345<br>1.345<br>1.345                | 1<br>0.3726<br>0<br>95% LCL<br>1.345<br>1.345<br>1.345<br>1.345<br>1.345 | 1<br>1<br>0<br><b>95% U</b><br>1.346<br>1.346<br>1.346<br>1.346 | CL   | 1<br>1<br>1<br>0<br><b>Median</b><br>1.345<br>1.345<br>1.345<br>1.345 | 1<br>1<br>0.4<br>0<br><b>Min</b><br>1.345<br>1.345<br>1.345<br>1.345 | 1<br>1<br>0<br><b>Max</b><br>1.345<br>1.345<br>1.345<br>1.345 | 0<br>0<br>0.15<br>0<br><b>Std Err</b><br>0<br>0<br>0<br>0 | 0.0%<br>0.0%<br>0.0%<br>35.29%<br>CV%<br>0.0%<br>0.0%<br>0.0%<br>0.0% | 0.0%<br>0.0%<br>15.0%<br>100.0%<br><b>%Effect</b><br>0.0%<br>0.0%<br>0.0% |
| 0.25<br>0.5<br>1<br>2  | Control Type                      | 4<br>4<br>4<br><b>rmed Sum</b><br><u>Count</u><br>4<br>4<br>4<br>4 | 0<br>mary<br><u>Mean</u><br>1.345<br>1.345<br>1.345<br>1.345 | 1<br>0.3726<br>0<br>95% LCL<br>1.345<br>1.345<br>1.345                   | 1<br>1<br>0<br><b>95% U</b><br>1.346<br>1.346<br>1.346          | CL   | 1<br>1<br>1<br>0<br><b>Median</b><br>1.345<br>1.345<br>1.345          | 1<br>1<br>0.4<br>0<br><b>Min</b><br>1.345<br>1.345<br>1.345          | 1<br>1<br>0<br><b>Max</b><br>1.345<br>1.345<br>1.345          | 0<br>0<br>0.15<br>0<br><b>Std Err</b><br>0<br>0<br>0      | 0.0%<br>0.0%<br>0.0%<br>35.29%<br>CV%<br>0.0%<br>0.0%<br>0.0%         | 0.0%<br>0.0%<br>15.0%<br>100.0%<br><b>%Effect</b><br>0.0%<br>0.0%         |

Analyst: Ja QA: 077/2/19



|                   |   | ytical Repo                     | 1.                |                 |                                     |         |         |               | eport Date:<br>est Code:          |                |          | 1:31 (p 1 of 1<br>20-2178-015 |
|-------------------|---|---------------------------------|-------------------|-----------------|-------------------------------------|---------|---------|---------------|-----------------------------------|----------------|----------|-------------------------------|
| Inland            | Silversi  | de 96-h Acute S                 | urvival Tes       | st              |                                     |         |         |               |                                   | Nautilu        | s Enviro | nmental (CA                   |
| Analys<br>Analyz  |   | 19-2340-3418<br>08 Jul-19 12:00 |                   | ooint:<br>ysis: | 96h Survival Ra<br>Linear Interpola |         | )       |               | ETIS Version:<br>fficial Results: | CETISv1<br>Yes | .8.7     |                               |
| Linear            | Interpo   | lation Options                  |                   |                 |                                     |         |         | · · · · · · · |                                   |                | ,        |                               |
| X Tran            | sform   | Y Transform                     | Seed              | 1               | Resamples                           | Exp 95% |         | Nethod        |                                   |                |          |                               |
| Linear            |   | Linear                          | 1382              | 357             | 1000                                | Yes     | ٦       | wo-Point Inte | erpolation                        |                |          |                               |
| Point E           | Stimate   | es                              |                   |                 |                                     |         |         |               |                                   |                |          |                               |
| Level             | %   | 95% LCL                         | 95% UCL           | TU              | 95% LCL                             | 95% UCL |         |               |                                   |                |          |                               |
| EC25              | 1.118   | 0.5739                          | 1.329             | 89.47           | 75.22                               | 174.3   |         |               |                                   |                |          |                               |
| EC50              | 1.412   | 0.8984                          | 1.553             | 70.83           | 64.39                               | 111.3   |         |               |                                   |                |          |                               |
| 96h Su            | rvival R  | ate Summary                     |                   |                 |                                     | Calcu   | lated V | ariate(A/B)   |                                   |                |          |                               |
| C-%               | C   | ontrol Type                     | Count             | Mean            | Min                                 | Max     | Std E   | rr Std De     | v CV%                             | %Effect        | Α        | в                             |
| 0                 | La  | ab Control                      | 4                 | 1               | 1                                   | 1       | 0       | 0             | 0.0%                              | 0.0%           | 20       | 20                            |
| 0.06              |   |                                 | 4                 | 1               | 1                                   | 1       | 0       | 0             | 0.0%                              | 0.0%           | 20       | 20                            |
| 0.125             |   |                                 | 4                 | 1               | 1                                   | 1       | 0       | 0             | 0.0%                              | 0.0%           | 20       | 20                            |
| 0.25              |   |                                 | 4                 | 1               | 1                                   | 1       | 0       | 0             | 0.0%                              | 0.0%           | 20       | 20                            |
| 0.5               |   |                                 | 4                 | 1               | 1                                   | 1       | 0       | 0             | 0.0%                              | 0.0%           | 20       | 20                            |
| 1                 |   |                                 | 4                 | 0.85            | 0.4                                 | 1       | 0.15    | 0.3           | 35.29%                            | 15.0%          | 17       | 20                            |
| 2                 |   |                                 | 4                 | 0               | 0                                   | 0       | 0       | 0             |                                   | 100.0%         | 0        | 20                            |
| OGh Survival Data | 1.0 0.9<br>0.8<br>0.7<br>0.6<br>0.5<br>0.4<br>0.3<br>0.2<br>0.1 |                                 | a l               |                 |                                     |         |         |               |                                   |                |          |                               |
|                   | 0.0<br>0.0  | 0.5                             | 1.0<br><b>C-%</b> |                 | 1.5 2.0                             |         |         |               |                                   |                |          |                               |



### Marine Acute Bioassay Static-Renewal Conditions

## Water Quality Measurements & Test Organism Survival

| Client:            | Geosyntectuco      |           | Test Species: M. beryllin | na   |                    |    | Te | ch Init | ials |    |
|--------------------|--------------------|-----------|---------------------------|------|--------------------|----|----|---------|------|----|
| Sample ID:         | Starkist Samoa Co. | Opstreams | Start Date/Time: 7/1/2019 | 1235 |                    | 0  | 24 | 48      | 72   | 96 |
| Sample Log-in No.: |                    |           | End Date/Time: 7/5/2019   | 1330 | Counts:            | DM | B  | STN     | RT   | RI |
| Test No.:          | 1907-5077          |           |                           |      | Readings:          | PM | RT | N       | 21   | RT |
|                    | · · · · ·          |           |                           |      | Dilutions made by: | Dn |    | DM      |      |    |

| Concentration<br>(%)                | Rep       |        |          | iber o<br>ganis |         | 9      | AS       |          | Salini<br>(ppt) |                       |          |          | Te    | mpera<br>(°C)                         | turə   |        | <b>Q</b> 5 | Disso          | lved (<br>(mg/L |                       | n          |      |      | pH<br>(units | )    |      |
|-------------------------------------|-----------|--------|----------|-----------------|---------|--------|----------|----------|-----------------|-----------------------|----------|----------|-------|---------------------------------------|--|--------|------------|----------------|-----------------|-----------------------|------------|------|------|--------------|------|------|
|                                     |           | 0      | 24       | 48              | 72      | 96     | 0        | 24       | 48              | 72                    | 96       | 0        | 24    | 48                                    | 72   | 96     | 0          | 24             | 48              | 72                    | 96         | 0    | 24   | 48           | 72   | 98   |
| Lab Control                         | A         | 5      | 5        | 5               | 5       | S      | 34.1     | 34.4     | 34.2            | 34,9                  | 355      | 24.1     | 24.4  | 24.2                                  | 24.5   | 24,4   | 7.5        | 6.3            | i-6.6           | 6.4                   | 63         | 7.96 | 8.02 | 7.82         | 7.94 | 808  |
|                                     | в         | 5      | 5        | 5               | 5       | 5      |          |          | 349             |                       |          | 300      |       | 243                                   | and the second s |        |            |                | 6.0             | and the second second |            |      | 1    | 1.96         |      |      |
|                                     | С         | 5      | 5        | 5               | 5       | 5      |          | 1.000    | 2.6             |                       |          |          |       |                                       | 1  | 23     |            |                |                 |                       |            |      |      |              |      |      |
|                                     | D         | 5      | 5        | 5               | 5       | 5      | 130      |          | 1               |                       |          |          |       |                                       | 1  |        |            |                |                 |                       | 10         | 1    |      |              |      |      |
| 0.06%                               | A         | 5      | 5        | 5               | 5       | 5      | 34.1     | 34.4     | 34.1            | 35.1                  | 35.8     | 24.0     | 24.5  | 243                                   | 24.5   | 24.4   | 7.6        | 62             | 46              | 6.3                   | 6.2        | 7.88 | 8.00 | 778          | 8.02 | 6.10 |
|                                     | в         | 5      | 5        | 5               | 5       | 5      |          |          | 35.2            | -                     |          |          | 193   | 249                                   |  |        |            | 1              | 6.1             |                       |            |      |      | 4.A          |      |      |
|                                     | С         | 5      | S        | 5               | 5       | 5      |          |          |                 |                       |          |          | 100   |                                       |  | 12     |            |                |                 |                       | -          |      |      |              |      |      |
|                                     | D         | 5      | 5        | 5               | 5       | 5      |          |          | 1               | 1                     |          |          |       |                                       |  |        |            |                |                 | 1                     |            |      |      |              |      |      |
| 0.125%                              | A         | 5      | 5        | 5               | 5       | 5      | 34.[     | 34.2     | 314             | 34.9                  | 355      | 24.0     | 245   | 243                                   | 24.5   | 24.4   | 26         | 6.2            | 4.7             | 6.3                   | 6.3        | 7.80 | 7.99 | 7.72         | 8.01 | 8.10 |
|                                     | в         | 5      | 6        | 5               | 5       | 5      |          |          | 34.8            | status a Province Par |          |          | 8     | 24.5                                  | -  |        |            |                | 6.1             |                       |            |      |      | 501          |      |      |
|                                     | С         | 5      | 5        | 5               | 5       | 5      |          |          |                 |                       |          |          |       |                                       |  |        |            |                | 17              | 1                     |            |      |      |              |      |      |
|                                     | D         | 5      | 5        | 5               | S       | 5      |          |          |                 |                       |          |          |       | 0                                     | -  |        |            |                | 1965            |                       |            |      |      |              |      |      |
| 0.25%                               | A         | 5      | 5        | 5               | 5       | 5      | 34.1     | 347      | 34 (            | 34,7                  | 35.4     | 24.1     | 247   | 慶                                     | 24.5   | 245    | 76         | 6.0            | 6.6             | 6.1                   | 6.1        | 765  | 7.88 | 7.6          | 7.87 | 7.96 |
|                                     | В         | 5      | 5        | 5               | 5       | 5      |          | 1        | 348             |                       | 128      | 5.5      |       | 24.5                                  |  | En l   |            |                | 5.6             | 10000                 |            |      |      | 7.70         |      |      |
|                                     | С         | 5      | 5        | 5               | 5       | 5      |          |          | 168             |                       |          |          |       | 1                                     |  |        |            |                |                 |                       |            |      |      |              |      |      |
|                                     | D         | 5      | 5        | 5               | 5       | 5      |          |          |                 |                       |          |          |       |                                       |  |        |            |                |                 | 000                   |            |      |      |              |      |      |
| 0.5*7                               | A         | 5      | 5        | 5               | 5       | 5      | 34.0     | 34.7     | 34              | 34                    | 55.4     | 24.2     | 24    | 243                                   | 24.5   | 244    | 75         | Ч.             | 6.5             | 4.6                   | 6.0        | 7.42 | 7.30 | 7.38         | 7.94 | 7.99 |
|                                     | в         | 5      | 5        | 5               | 5       | S      |          | 1        | 347             | 10.00                 |          |          |       | 24.7                                  | -  | 5.00   |            |                | 51              |                       | 1          |      |      | 7.13         |      |      |
|                                     | С         | 5      | 6        | 5               | 5       | 5      |          |          |                 |                       |          |          | 120   |                                       |  |        |            |                |                 |                       |            |      |      | 2.4          |      |      |
| 10                                  | D         | 5      | 5        | 5               | 5       | 5      |          |          |                 |                       |          |          |       |                                       | 2.18   |        |            |                |                 |                       |            |      |      | 1            |      |      |
| 1.0 %                               | A         | 5      | 2        | Z               | 2       | 2      | 34.0     | 341      | 34.0            | 341                   | 35,0     | 4,0      | 24.6  | 242                                   | 217  | 246    | 73         | 1.0            | 6.5             | 30                    | 4.6        | 708  | 7.34 | 1.06         | 7.43 | 7.78 |
|                                     | В         | 5      | 5        | 5               | 5       | 5      |          |          | 34.5            |                       |          |          |       | 249                                   |  |        |            | 0              | 4.8             |                       |            |      |      | 768          |      |      |
|                                     | С         | 5      | 55       | 5               | 5       | 5      |          |          |                 |                       |          |          |       |                                       |  |        |            |                |                 |                       |            |      |      |              |      |      |
|                                     | D         | 5      | 5        | 5               | 5       | 5      |          |          |                 |                       |          |          |       |                                       |  |        |            |                |                 |                       | 1985       |      |      |              |      | - 3  |
| 2.0 %                               | A         | 5      | 0        | -               |         | 1      | 34.0     | 311      | 34.             | -                     | -        | 24.2     | 24.6  | 242                                   | -  | -      | 70         | 0.7            | 63              | -                     | -          | 6.72 | 7.49 | 675          | -    | -    |
|                                     | в         | 5      | 0        | -               | K       | D      |          |          | 35.4            |                       |          | 1        |       | 1<br>24.6                             |  |        |            |                | 5.0             |                       |            |      | -    | 1.58         |      | 2    |
| _                                   | С         | 5      | 2        | 0               | 10      | P      | 2.3      | 1.8      |                 |                       |          |          |       |                                       |  |        |            | 133            |                 |                       |            |      |      | 2.2          |      |      |
|                                     | D         | 5      | 0        | 7               | 1       |        |          |          |                 |                       |          | 131      |       |                                       |  |        | 2          |                |                 |                       |            |      |      |              |      |      |
| nitial Counts QC'd b<br>Initiated b |           | -      | _        |                 |         |        |          |          |                 |                       |          |          |       |                                       |  |        |            | () () ()<br>() |                 |                       | 10         |      |      |              |      |      |
| Animal Source/Date                  | e Rece    | ived   | :        | AC              | 51      | 61     | 29/      | 19       |                 | -                     | Age a    | at Initi | ation | _1                                    | 2 4  | day    | s          |                |                 |                       |            |      | Fee  | ding T       | imes |      |
| nimal Acclimation                   | n Qualit  | fiers  | (circl   | e all 1         | that a  | pply): | :        |          |                 | (                     | 122)1    | Q23      | 8 /   | Q24                                   | / no   | one    |            |                | _               |                       |            | 0    | 24   | 48           | 72   | 96   |
| Comments:                           |           | i = it | nitial r | eadin           | g in fr | esh te | est solu | ution, 1 | í = fina        | l read                | ing in t | est ch   | ambei | r prior f                             | to rene  | ewal , | ۵) m       | 18 11          | 571             | 1/19                  | AM:<br>PM: | 1705 | 0100 | 0850         | 1000 | 0900 |
|                                     |           |        |          |                 |         |        |          |          | 0               | ŷ) / r                |          |          |       |                                       |  | 0      | Da         | 16 12          | 171             | 2/17                  |            |      | 1.27 |              | 57 B |      |
| C Chaole                            | KI        | 20     | -1       | 12/1            | a       |        |          |          | -0              |                       |          | 100      | 218-  | 1241                                  | 19   | C      | Dor        | 明              | 5               |                       |            | ino  | 71   | 24           | 49   |      |
| QC Check:                           | <u>r1</u> | r      | (1       | -11             |         |        |          |          |                 |                       |          |          |       | · · · · · · · · · · · · · · · · · · · | · •  |        |            |                | - FI            | nal Re                | view:      |      |      |              |      |      |

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

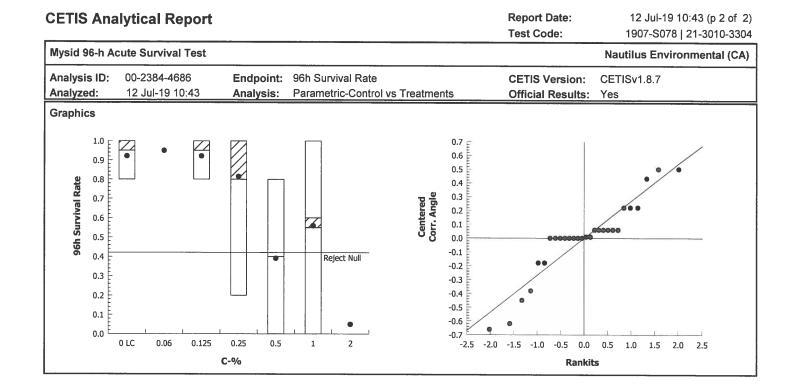
Acute Mysid Shrimp

| CETIS Sun   | nmary Repo   | rt     |  |   |                    |                |                | port Date:<br>st Code: |  | 2 Jul-19 10:4<br>07-S078   21 | . ,      |
|---|--|--------|--|---|--------------------|----------------|----------------|------------------------|--|-------------------------------|----------|
| Mysid 96-h Ad   | cute Survival Te   | st     |  |   |                    |                |                |                        |  | s Environm                    |          |
| Batch ID:<br>Start Date:<br>Ending Date:<br>Duration: | 13-1291-7689<br>01 Jul-19 12:15<br>05 Jul-19 13:15<br>4d 1h            | i      | Test Type:<br>Protocol:<br>Species:<br>Source: | Survival (96h)<br>EPA/821/R-02-<br>Americamysis<br>Aquatic Biosys | bahia              |                | Di             | ine:                   | Natural Seawal<br>Not Applicable<br>5d | er                            |          |
| Receive Date  | 17-2973-4607<br>23 Jun-19 10:2<br>₀01 Jul-19 08:35<br>3 Ad 2h (6.8 °C) | 2      | Code:<br>Material:<br>Source:<br>Station:      | 19-0711<br>Effluent Sample<br>Starkist Samoa<br>OD Streams        |                    |                |                | ient: (<br>oject:      | Geosyntec                              |                               |          |
| Comparison  | Summary  |        |  |   |                    |                |                |                        |  |                               |          |
| Analysis ID   | Endpoint   |        | NOEL   | . LOEL  | TOEL               | PMSD           | TU             | Metho                  | d                                      |                               |          |
| 00-2384-4686  | 96h Survival Ra  | ate    | 0.25   | 0.5   | 0.3536             | 55.7%          | 400            | Dunne                  | tt Multiple Com                        | nparison Tes                  | st       |
| Point Estimat   | e Summary  |        |  |   |                    |                |                |                        |  |                               |          |
| Analysis ID   | Endpoint   |        | Level  | %   | 95% LCL            | 95% UCL        | TU             | Metho                  | d                                      |                               |          |
| 09-6936-5347  | 96h Survival Ra  | ate    | EC25<br>EC50                                   | 0.3029<br>0.4904  | 0.09827<br>0.09014 | 1.418<br>1.839 | 330.2<br>203.9 | Linear                 | Interpolation (I                       | CPIN)                         |          |
| Test Acceptal   | bility   |        |  |   |                    |                |                |                        |  |                               |          |
| Analysis ID   | Endpoint   |        | Attrib   | ute   | Test Stat          | TAC Limi       | ts             | Overla                 | ap Decision                            | I                             |          |
| 00-2384-4686  | 96h Survival Ra  | ate    | Contro   | ol Resp   | 0.95               | 0.9 - NL       |                | Yes                    | Passes A                               | cceptability                  | Criteria |
| 09-6936-5347  | 96h Survival Ra  | ate    | Contr  | ol Resp   | 0.95               | 0.9 - NL       |                | Yes                    | Passes A                               | cceptability                  | Criteria |
| 96h Survival  | Rate Summary   |        |  |   |                    |                |                |                        |  |                               |          |
| C-%   | Control Type   | Coun   | t Mean   | 95% LCL   | 95% UCL            | Min            | Max            | Std Ei                 | r Std Dev                              | CV%                           | %Effect  |
| 0   | Lab Control  | 4      | 0.95   | 0.7909  | 1                  | 0.8            | 1              | 0.05                   | 0.1                                    | 10.53%                        | 0.0%     |
| 0.06  |  | 4      | 1  | 1   | 1                  | 1              | 1              | 0                      | 0                                      | 0.0%                          | -5.26%   |
| 0.125   |  | 4      | 0.95   | 0.7909  | 1                  | 0.8            | 1              | 0.05                   | 0.1                                    | 10.53%                        | 0.0%     |
| 0.25  |  | 4      | 0.8  | 0.1635  | 1                  | 0.2            | 1              | 0.2                    | 0.4                                    | 50.0%                         | 15.79%   |
| 0.5   |  | 4      | 0.4  | 0   | 0.9197             | 0              | 0.8            | 0.1633                 |  | 81.65%                        | 57.89%   |
| 1   |  | 4<br>4 | 0.55<br>0                                      | 0<br>0  | 1<br>0             | 0              | 1<br>0         | 0.263                  | 0.526                                  | 95.63%                        | 42.11%   |
| 2   |  | 4      | 0  | 0   | 0                  | 0              | 0              | 0                      | 0                                      | ·····                         | 100.0%   |
| 96h Survival  |  |        |  |   |                    |                |                |                        |  |                               |          |
| C-%   | Control Type   | Rep 1  |  | Rep 3   | Rep 4              |                |                |                        |  |                               |          |
| 0   | Lab Control  | 1      | 0.8  | 1   | 1                  |                |                |                        |  |                               |          |
| 0.06  |  | 1      | 1  | 1   | 1                  |                |                |                        |  |                               |          |
| 0.125   |  | 1      | 0.8  | 1   | 1                  |                |                |                        |  |                               |          |
| 0.25  |  | 1      | 1  | 0.2   | 1                  |                |                |                        |  |                               |          |
| 0.5   |  | 0.4    | 0.4  | 0.8   | 0                  |                |                |                        |  |                               |          |
| 1   |  | 0      | 1  | 1   | 0.2                |                |                |                        |  |                               |          |
| 2   |  | 0      | 0  | 0   | 0                  |                |                |                        |  |                               |          |

@ 2 a 15 9/15/19

|   |  | ort   |   |   |   |       |   | •  | ort Date:<br>Code:   |   | Jul-19 10:4<br>7-S078   21  | -3010-330  |
|---|--|---|---|---|---|-------|---|--|--|---|---|--|
| Mysid 96-h A  | Acute Survival Te  | st  |   |   |   |       |   |  |  | Nautilus  | Environn  | nental (CA)  |
| Analysis ID:<br>Analyzed:   | 00-2384-4686<br>12 Jul-19 10:4   |   | •   | Survival Ra<br>ametric-Con  |   | reatr | ments   |  | IS Version:<br>ial Results:  | CETISv1.<br>Yes   | .8.7  |  |
| Data Transfo  | orm  | Zeta  | Alt Hyp   | Trials  | Seed  |       |   | PMSD   | NOEL   | LOEL  | TOEL  | TU   |
| Angular (Corr   | rected)  | NA  | C > T   | NA  | NA  |       |   | 55.7%  | 0.25   | 0.5   | 0.3536  | 400  |
| Dunnett Mul   | tiple Comparisor   | n Test  |   |   |   |       |   |  |  |   |   |  |
| Control   | vs C-%   |   | Test Stat   | Critical  | MSD   | DF    | P-Value   | P-Type   | Decision(  | a:5%)   |   |  |
| Lab Control   | 0.06   |   | -0.2473   | 2.407   |   |       | 0.8958  | CDF  |  | icant Effect  |   |  |
|   | 0.125  |   | 0   | 2.407   |   |       | 0.8333  | CDF  | •  | icant Effect  |   |  |
|   | 0.25   |   | 0.6682  | 2.407   |   |       | 0.5725  | CDF  | -  | icant Effect  |   |  |
|   | 0.5*   |   | 2.535   | 2.407   |   |       | 0.0392  | CDF  | Significant  |   |   |  |
|   | 1  |   | 1.831   | 2.407   |   | -     | 0.1381  | CDF  | -  | icant Effect  |   |  |
| ANOVA Table   | e  |   | ·····   |   |   |       |   |  |  |   |   |  |
| Source  | Sum Squ  | ares  | Mean Squ  | are   | DF  |       | F Stat  | P-Value  | Decision(  |   |   |  |
| Between   | 1.49915  |   | 0.2998301   |   | 5   |       | 2.586   | 0.0623   | Non-Signif   | icant Effect  |   |  |
| Error   | 2.08676  |   | 0.1159311   |   | 18  |       |   |  |  |   |   |  |
| Total   | 3.585911   |   |   |   | 23  |       |   |  |  |   |   |  |
| Distributiona   | al Tests   |   |   |   |   |       |   |  |  |   |   |  |
| Attribute   | Test   |   |   | Test Stat   | Critica   |       | P-Value   | Decision   | (α:1%)   |   |   |  |
| Variances   | Mod Leve   | ene Equalit   | y of Variance   | 2.66  | 4.248   |       | 0.0571  | Equal Var  | iances   |   |   |  |
| Variances   | Levene F   |   |   |   |   |       |   |  | lances   |   |   |  |
| Distribution  | Lovono L   | Equality of N   | /ariance  | 6.494   | 4.248   |       | 0.0013  | Unequal \  |  |   |   |  |
|   |  | Equality of N<br>Wilk W Nor   |   | 6.494<br>0.9123   | 4.248<br>0.884  |       | 0.0013<br>0.0395  | -  | /ariances  |   |   |  |
|   |  |   |   |   |   |       |   | Unequal \  | /ariances  | -7.5.1. <sup>-</sup>  |   |  |
|   | Shapiro-   |   |   |   |   |       |   | Unequal \  | /ariances  | Std Err   | CV%   | %Effect  |
| 96h Survival  | Shapiro-I<br>Rate Summary  | Wilk W Nor  | mality  | 0.9123  | 0.884   | CL    | 0.0395  | Unequal Normal Di  | /ariances<br>stribution  | Std Err<br>0.05   | <b>CV%</b><br>10.53%  | %Effect<br>0.0%  |
| 96h Survival<br>C-%   | Shapiro-N<br>Rate Summary<br>Control Type  | Wilk W Nor  | mality<br>Mean  | 0.9123<br>95% LCL   | 0.884<br><b>95% U</b>   | CL    | 0.0395<br>Median  | Unequal Normal Di  | /ariances<br>stribution<br>Max   |   | -   |  |
| 96h Survival<br>C-%<br>0  | Shapiro-N<br>Rate Summary<br>Control Type  | Wilk W Nor<br>Count   | mality<br>Mean<br>0.95  | 0.9123<br>95% LCL<br>0.7909   | 0.884<br><b>95% U</b>   | CL    | 0.0395<br><b>Median</b><br>1  | Unequal N<br>Normal Di<br>Min<br>0.8   | /ariances<br>istribution<br>Max<br>1   | 0.05  | 10.53%  | 0.0%   |
| <b>96h Survival</b><br>C-%<br>0<br>0.06   | Shapiro-N<br>Rate Summary<br>Control Type  | Wilk W Nor<br>Count<br>4<br>4   | mality<br>Mean<br>0.95<br>1   | 0.9123<br>95% LCL<br>0.7909<br>1  | 0.884<br><b>95% U</b><br>1<br>1   | CL    | 0.0395<br><b>Median</b><br>1<br>1   | Unequal Normal Di<br>Min<br>0.8<br>1   | /ariances<br>istribution<br>Max<br>1<br>1  | 0.05<br>0   | 10.53%<br>0.0%  | 0.0%<br>-5.26%   |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125   | Shapiro-N<br>Rate Summary<br>Control Type  | Wilk W Nor<br>Count<br>4<br>4<br>4  | Mean<br>0.95<br>1<br>0.95   | 0.9123<br>95% LCL<br>0.7909<br>1<br>0.7909  | 0.884<br><b>95% U</b><br>1<br>1<br>1  | CL    | 0.0395<br><b>Median</b><br>1<br>1<br>1  | Unequal N<br>Normal Di<br>Min<br>0.8<br>1<br>0.8   | /ariances<br>istribution<br>Max<br>1<br>1<br>1<br>1  | 0.05<br>0<br>0.05   | 10.53%<br>0.0%<br>10.53%  | 0.0%<br>-5.26%<br>0.0%   |
| <b>96h Survival</b><br><b>C-%</b><br>0<br>0.06<br>0.125<br>0.25   | Shapiro-N<br>Rate Summary<br>Control Type  | Vilk W Nor<br>Count<br>4<br>4<br>4<br>4   | <b>Mean</b><br>0.95<br>1<br>0.95<br>0.95<br>0.8   | 0.9123<br><b>95% LCL</b><br>0.7909<br>1<br>0.7909<br>0.1635   | 0.884<br>95% U<br>1<br>1<br>1<br>1  | CL    | 0.0395<br>Median<br>1<br>1<br>1<br>1  | Unequal Normal Di<br>Min<br>0.8<br>1<br>0.8<br>0.2   | /ariances<br>istribution<br>Max<br>1<br>1<br>1<br>1<br>1   | 0.05<br>0<br>0.05<br>0.2  | 10.53%<br>0.0%<br>10.53%<br>50.0%   | 0.0%<br>-5.26%<br>0.0%<br>15.79%   |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5  | Shapiro-N<br>Rate Summary<br>Control Type  | Vilk W Nor<br>Count<br>4<br>4<br>4<br>4<br>4<br>4   | Mean<br>0.95<br>1<br>0.95<br>0.8<br>0.8<br>0.4  | 0.9123<br><b>95% LCL</b><br>0.7909<br>1<br>0.7909<br>0.1635<br>0  | 0.884<br><b>95% U</b><br>1<br>1<br>1<br>1<br>0.9197   | CL    | 0.0395<br><u>Median</u><br>1<br>1<br>1<br>1<br>0.4  | Unequal \<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0  | /ariances<br>istribution<br>Max<br>1<br>1<br>1<br>1<br>1<br>0.8  | 0.05<br>0<br>0.05<br>0.2<br>0.1633  | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%   | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%   |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2  | Shapiro-N<br>Rate Summary<br>Control Type  | Count           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4   | Mean<br>0.95<br>1<br>0.95<br>0.95<br>0.8<br>0.4<br>0.55<br>0  | 0.9123<br><b>95% LCL</b><br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0   | 0.884<br>95% U0<br>1<br>1<br>1<br>0.9197<br>1   | CL    | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>0.4<br>0.6  | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0   | /ariances<br>istribution<br>Max<br>1<br>1<br>1<br>1<br>0.8<br>1  | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263   | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%   | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%   |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2<br>Angular (Cor                                      | Shapiro-<br>I Rate Summary<br>Control Type<br>Lab Control                                      | Count           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4           4   | Mean<br>0.95<br>1<br>0.95<br>0.95<br>0.8<br>0.4<br>0.55<br>0  | 0.9123<br><b>95% LCL</b><br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0   | 0.884<br>95% U0<br>1<br>1<br>1<br>0.9197<br>1   |       | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>0.4<br>0.6  | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0   | /ariances<br>istribution<br>Max<br>1<br>1<br>1<br>1<br>0.8<br>1  | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263   | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%   | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%   |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2<br>2<br>Angular (Cor<br>C-%                          | Shapiro-<br>I Rate Summary<br>Control Type<br>Lab Control                                      | Vilk W Nor<br>Count<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>med Sumr   | Mean<br>0.95<br>1<br>0.95<br>0.8<br>0.4<br>0.55<br>0<br>mary  | 0.9123<br>95% LCL<br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0<br>0<br>0  | 0.884<br>95% U<br>1<br>1<br>1<br>1<br>0.9197<br>1<br>0  |       | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>0.4<br>0.6<br>0   | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0<br>0<br>0   | Variances<br>istribution<br>Max<br>1<br>1<br>1<br>1<br>1<br>0.8<br>1<br>0  | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263<br>0  | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%<br>95.63%   | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%<br>100.0%   |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2  | Shapiro-<br>I Rate Summary<br>Control Type<br>Lab Control<br>rrected) Transfor<br>Control Type | Vilk W Nor<br>Count<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>7<br>med Sumr<br>Count   | Mean<br>0.95<br>1<br>0.95<br>0.8<br>0.4<br>0.55<br>0<br>mary<br>Mean  | 0.9123<br>95% LCL<br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0<br>0<br>0<br>95% LCL   | 0.884<br>95% U0<br>1<br>1<br>1<br>1<br>1<br>0.9197<br>1<br>0<br>95% U0                                |       | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>0.4<br>0.6<br>0<br>Median   | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | Variances<br>Istribution<br>Max<br>1<br>1<br>1<br>1<br>1<br>0.8<br>1<br>0<br>0<br>Max  | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263<br>0<br><b>Std Err</b>                                      | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%<br>95.63%   | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%<br>100.0%   |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2<br>Angular (Cor<br>C-%<br>0<br>0.06                  | Shapiro-<br>I Rate Summary<br>Control Type<br>Lab Control<br>rrected) Transfor<br>Control Type | Vilk W Nor<br>Count<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>5<br>7<br>7<br>7<br>0<br>0<br>0<br>1<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7  | Mean           0.95           1           0.95           0.8           0.4           0.55           0   | 0.9123<br>95% LCL<br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0<br>0<br>0<br>95% LCL<br>1.096                                  | 0.884<br>95% U0<br>1<br>1<br>1<br>1<br>0.9197<br>1<br>0<br>95% U0<br>1.475                            |       | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>0.4<br>0.6<br>0<br>Median<br>1.345  | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | /ariances<br>stribution<br>Max<br>1<br>1<br>1<br>1<br>1<br>0.8<br>1<br>0<br>0<br>Max<br>1.345                                | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263<br>0<br><b>Std Err</b><br>0.05953                           | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%<br>95.63%<br><b>CV%</b><br>9.26%                        | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%<br>100.0%<br>%Effect<br>0.0%                              |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2<br>Angular (Cor<br>C-%<br>0<br>0.06<br>0.125         | Shapiro-<br>I Rate Summary<br>Control Type<br>Lab Control<br>rrected) Transfor<br>Control Type | Vilk W Nor<br>Count<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>med Sumr<br>Count<br>4<br>4  | Mean           0.95           1           0.95           0.8           0.4           0.55           0           mary           Mean           1.286           1.345                                 | 0.9123<br>95% LCL<br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0<br>0<br>0<br>95% LCL<br>1.096<br>1.345                         | 0.884<br>95% U0<br>1<br>1<br>1<br>1<br>0.9197<br>1<br>0<br>95% U0<br>1.475<br>1.346                   |       | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>0.4<br>0.6<br>0<br>Median<br>1.345<br>1.345                                 | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | /ariances<br>stribution<br>Max<br>1<br>1<br>1<br>1<br>1<br>0.8<br>1<br>0<br>0<br><b>Max</b><br>1.345<br>1.345                | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263<br>0<br><b>Std Err</b><br>0.05953<br>0                      | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%<br>95.63%<br><b>CV%</b><br>9.26%<br>0.0%                | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%<br>100.0%<br><b>%Effect</b><br>0.0%<br>-4.63%             |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2<br>Angular (Cor<br>C-%<br>0<br>0.06<br>0.125         | Shapiro-<br>I Rate Summary<br>Control Type<br>Lab Control<br>rrected) Transfor<br>Control Type | Vilk W Nor<br>Count<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>5<br>Count<br>4<br>4<br>4<br>4   | Mean           0.95           1           0.95           0.8           0.4           0.55           0           mary           Mean           1.286           1.345           1.286                 | 0.9123<br>95% LCL<br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0<br>0<br>0<br>95% LCL<br>1.096<br>1.345<br>1.096                | 0.884<br>95% U0<br>1<br>1<br>1<br>1<br>0.9197<br>1<br>0<br>95% U0<br>1.475<br>1.346<br>1.475          |       | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>0.4<br>0.6<br>0<br>Median<br>1.345<br>1.345<br>1.345                        | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | /ariances<br>stribution<br>Max<br>1<br>1<br>1<br>1<br>1<br>0.8<br>1<br>0<br>0<br><b>Max</b><br>1.345<br>1.345<br>1.345       | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263<br>0<br><b>Std Err</b><br>0.05953<br>0<br>0.05953           | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%<br>95.63%<br>95.63%<br>9.26%<br>0.0%<br>9.26%           | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%<br>100.0%<br>42.11%<br>100.0%<br>-4.63%<br>0.0%<br>12.51% |
| 96h Survival<br>C-%<br>0<br>0.06<br>0.125<br>0.25<br>0.5<br>1<br>2<br>Angular (Cor<br>C-%<br>0<br>0.06<br>0.125<br>0.25 | Shapiro-<br>I Rate Summary<br>Control Type<br>Lab Control<br>rrected) Transfor<br>Control Type | Count           4 | Mean           0.95           1           0.95           0.8           0.4           0.55           0           mary           Mean           1.286           1.345           1.286           1.125 | 0.9123<br>95% LCL<br>0.7909<br>1<br>0.7909<br>0.1635<br>0<br>0<br>0<br>0<br>0<br>95% LCL<br>1.096<br>1.345<br>1.096<br>0.4234 | 0.884<br>95% U0<br>1<br>1<br>1<br>1<br>0.9197<br>1<br>0<br>95% U0<br>1.475<br>1.346<br>1.475<br>1.826 |       | 0.0395<br>Median<br>1<br>1<br>1<br>1<br>1<br>0.4<br>0.6<br>0<br>Median<br>1.345<br>1.345<br>1.345<br>1.345<br>1.345 | Unequal N<br>Normal Di<br>0.8<br>1<br>0.8<br>0.2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | /ariances<br>stribution<br>Max<br>1<br>1<br>1<br>1<br>1<br>0.8<br>1<br>0<br>Max<br>1.345<br>1.345<br>1.345<br>1.345<br>1.345 | 0.05<br>0<br>0.05<br>0.2<br>0.1633<br>0.263<br>0<br><b>Std Err</b><br>0.05953<br>0<br>0.05953<br>0.2204 | 10.53%<br>0.0%<br>10.53%<br>50.0%<br>81.65%<br>95.63%<br>95.63%<br>9.26%<br>0.0%<br>9.26%<br>39.19% | 0.0%<br>-5.26%<br>0.0%<br>15.79%<br>57.89%<br>42.11%<br>100.0%<br><b>%Effect</b><br>0.0%<br>-4.63%<br>0.0%     |

Analyst: Ja QA: 4797/12/19



Analyst: Ja QA: 4797/12/19

|                  |   | tical Repo                    |         |                  |                                     |         |             | •             | ort Date:<br>Code:        |                |          | 1:00 (p 1 of 1<br>21-3010-330 |
|------------------|---|-------------------------------|---------|------------------|-------------------------------------|---------|-------------|---------------|---------------------------|----------------|----------|-------------------------------|
| Mysid            | 96-h Acut   | e Survival Tes                | st      |                  |                                     |         |             |               |                           | Nautilus       | s Enviro | nmental (CA                   |
| Analys<br>Analyz |   | 9-6936-5347<br>1 Jul-19 13:59 |         | point:<br>lysis: | 96h Survival Ra<br>Linear Interpola |         |             |               | S Version:<br>al Results: | CETISv1<br>Yes | .8.7     |                               |
| Linear           | Interpola   | tion Options                  |         |                  |                                     |         |             |               |                           |                |          |                               |
| X Tran           | sform   | Y Transform                   | See     | d                | Resamples                           | Exp 95% | CL Met      | nod           |                           |                |          |                               |
| Linear           |   | Linear                        | 8236    | 603              | 1000                                | Yes     |             | -Point Interp | olation                   |                |          |                               |
| Point B          | Estimates   |                               |         |                  |                                     |         |             |               |                           |                |          |                               |
| Level            | %   |                               | 95% UCL | τu               | 95% LCL                             | 95% UCL |             |               |                           |                |          |                               |
| EC25             | 0.3029  | 0.09827                       | 1.418   | 330.2            | 70.51                               | 1018    |             |               |                           |                |          |                               |
| EC50             | 0.4904  | 0.09014                       | 1.839   | 203.9            | 54.37                               | 1109    |             |               |                           |                |          |                               |
| 96h Sı           | Irvival Ra  | te Summary                    |         |                  |                                     | Calcu   | lated Varia | ite(A/B)      |                           |                |          |                               |
| C-%              | Сог   | ntrol Type                    | Count   | Mean             | Min                                 | Мах     | Std Err     | Std Dev       | CV%                       | %Effect        | Α        | в                             |
| 0                | Lab   | Control                       | 4       | 0.95             | 0.8                                 | 1       | 0.05        | 0.1           | 10.53%                    | 0.0%           | 19       | 20                            |
| 0.06             |   |                               | 4       | 1                | 1                                   | 1       | 0           | 0             | 0.0%                      | -5.26%         | 20       | 20                            |
| 0.125            |   |                               | 4       | 0.95             | 0.8                                 | 1       | 0.05        | 0.1           | 10.53%                    | 0.0%           | 19       | 20                            |
| 0.25             |   |                               | 4       | 0.8              | 0.2                                 | 1       | 0.2         | 0.4           | 50.0%                     | 15.79%         | 16       | 20                            |
| 0.5              |   |                               | 4       | 0.4              | 0                                   | 0.8     | 0.1633      | 0.3266        | 81.65%                    | 57.89%         | 8        | 20                            |
| 1                |   |                               | 4       | 0.55             | 0                                   | 1       | 0.263       | 0.526         | 95.63%                    | 42.11%         | 11       | 20                            |
| 2                |   |                               | 4       | 0                | 0                                   | 0       | 0           | 0             |                           | 100.0%         | 0        | 20                            |
| Graphi           | 1.0 0.9<br>0.9<br>0.8<br>0.7<br>0.7<br>0.6<br>0.7<br>0.7<br>0.7<br>0.7<br>0.7<br>0.4<br>0.4<br>0.4<br>0.3<br>0.2<br>0.1 |                               | •       |                  |                                     |         |             |               |                           |                |          |                               |

C-%

## Marine Acute Bioassay Static-Renewal Conditions

Water Quality Measurements & Test Organism Survival

| Client:            | Geosynteo <del>/JCO</del> © |       |
|--------------------|-----------------------------|-------|
| Sample ID:         | Starkist Samoa Co.          | opstr |
| Sample Log-in No.: | 19-0711                     |       |
| Test No.:          | 1907-5078                   |       |

art Date/Time: <u>7/1/2019</u>

 Tech Initials

 0
 24
 48
 72
 96

 2M
 JBSDM
 RT
 RT
 RT

 2M
 RT
 TN
 RT
 RT

 2M
 PM
 PM
 PM

| Concentration<br>(%)                     | Rep    |         |                | ber o<br>ganis | of Live<br>sms | •        | RA      | :    | Salinii<br>(ppt) |        | Q.7      |          | Tei   | npera<br>(°C) | ture   |      | QS   |                | lved (<br>(mg/L  |     | n   |      |  | pH<br>(units | )    |      |
|--|--------|---------|----------------|----------------|----------------|----------|---------|------|------------------|--------|----------|----------|-------|---------------|--------|------|------|----------------|------------------|-----|-----|------|--|--------------|------|------|
|  |        | 0       | 24             | 48             | 72             | 96       | 0       | 24   |                  | 1      | 9        | 0        | 24    | 1             | 7      | 0.05 |      |                |                  |     |     |      |  | 1            | 2    |      |
| Lab Control                              | A      | 5       | 5              | 5              | 5              | 5        | 34.1    | 34.6 | i<br>34,Z        | 31.9   | 35.7     | 24.2     | 242   | 24.6          | 246    | 24.5 | 75   | 6.2            | 6.7              | 6.3 | 6.4 | 296  | 8.11                                     | i<br>7.82    | 7.95 | 8.04 |
|  | в      | 5       | 5              | 4              | 4              | 4        |         |      | 35.2             |        |          |          |       | 24:3          | 1000   |      |      |                | 6.3              |     |     |      | S.S.Berth                                | 8.04         |      |      |
|  | С      | 5       | 5              | 5              | 5              | 5        |         |      |                  |        |          |          |       |               |        |      |      |                |                  |     |     |      |  |              |      |      |
|  | D      | 5       | 5              | 5              | 5              | 5        |         |      |                  |        | 1. 3     |          |       |               |        |      |      |                |                  | 1   |     |      |  |              |      |      |
| 0.06%                                    | A      | 5       | 5              | 5              | 5              | 5        | 34.(    | 345  | 34.4             | 35.2   | 36.2     | 24.1     | 24.6  | 243           | 24.4   | 24.4 | 7.5  | 6.1            | 4.8              | 6.4 | 6.2 | 788  | 8.64                                     | 1778         | 8.06 | 8.05 |
|  | в      | 5       | 5              | 5              | 5              | 5        |         |      | 35.2             |        |          |          |       | 24.4          |        |      |      |                | 64               |     |     |      | 1. | 5.04         |      |      |
|  | С      | 5       | 6              | 5              | 5              | 5        |         |      |                  | 1      |          |          |       |               |        |      |      |                |                  |     |     | (FI) |  |              |      |      |
|  | D      | 5       | 5              | 5              | 5              | 5        |         |      |                  |        |          |          |       |               |        |      |      |                |                  |     |     |      |  |              |      |      |
| 0.125%                                   | A      | 5       | 5              | 5              | 5              | 5        | 34.(    | 348  | 1<br>34,0        | 35,4   | 36.4     | 2Y, 1    | 24.1  | 24.2          | 24.4   | 24.2 | 75   | 6.3            | 6.8              | 6.3 | 6.2 | 780  | 8:09                                     | 7.82         | 7.99 | 8.04 |
|  | в      | 51      | 84             | 4              | 4              | Ч        |         |      | 35.6             |        |          |          | 4     | 24.3          |        |      |      |                | f&:Z             |     |     |      | ALC: NUMBER OF T                         | 4.96         |      |      |
|  | c      | 5       | 5              | 5              | 5              | 5        |         | 2    |                  |        |          |          |       |               |        |      |      | 1              |                  |     |     |      |  |              |      |      |
|  | D      | 5       | 5              | 5              | 5              | 5        |         |      |                  |        |          | 1        |       |               |        |      |      |                |                  |     |     |      |  |              |      |      |
| 0.25%                                    | A      | 5       | 5              | 5              | S              | 5        | 34.1    | 34.5 | i<br>34.2        | 35.0   | 359      |          | ZY.1  | i<br>24.3     | 24.6   | 24.4 | 7,5  | 6.0            | 6.8              | 6.0 | 6.1 | 766  | 7.94                                     | 7.6          | 7.95 | 8.02 |
|  | в      | 5       | 5              | 5              | 5              | 5        |         |      | \$5.Z            |        |          |          |       | 24.5          |        |      |      | 1.             | <sup>1</sup> 6.3 |     |     |      | dales.                                   | f<br>8.03    |      |      |
|  | С      | 5       |                | 1              | 1              | 9        |         |      |                  | 172.   |          |          |       |               |        |      |      |                |                  |     |     |      |  |              |      |      |
|  | D      | 5       | 5              | 5              | 5              | 5        |         |      |                  |        |          |          |       |               |        |      |      |                |                  |     |     |      |  |              |      |      |
| 0.5%                                     | A      | 5       | 6)             | 5              | 4              | Z        | 34.1    | 344  | 1<br>342         | 353    | 35.9     | 24.0     | 247   | 243           | 24.8   | 24.7 | 7.4  | 6.1            | 6.7              | 6.2 | 6.1 | 743  | 803                                      | 7.38         | 8.09 | 8.15 |
|  | в      | 5       | 5              | 5              | Ż              | 2        |         |      | To the           |        |          |          |       | 24.7          |        |      |      |                | 63               | 1.5 | Sea |      | NOTE: N                                  | f. Vo        |      |      |
|  | С      | 5       | 5              | 5              | 5              | 4        |         |      |                  |        |          |          |       |               |        |      |      |                |                  |     |     |      |  |              |      |      |
|  | D      | 5       | B              | 0              | 0              | Ò        |         |      |                  |        |          |          |       |               |        |      |      | 12.            |                  |     | 100 |      |  |              |      |      |
| 1.0%                                     | Α      | 5       | B              | 2              | ۲              | 0        | 34.0    | 34.5 | ,<br>341         | 35,1   | 36.1     | 24.0     | 24.8  | 24.2          | 24.8   | 248  | 72   | 58             | i<br>65          | 6.0 | 6.0 | 712  | 794                                      | 1            | 7.49 | 814  |
|  | в      | 5       | 0              | ŝ              | 5              | 5        |         |      | 35.2             |        |          |          |       | 24.7          | 1      |      |      | (T.) (T.) (G.) | 5.4              |     |     |      |  | f<br>7.83    |      |      |
|  | С      | 5       | $\mathfrak{B}$ | 5              | 5              | 5        |         |      |                  | 12-3   | 14.3     |          |       |               |        |      |      |                |                  |     |     |      |  |              |      |      |
|  | D      | 5       | B              | 4              | B              | 1        |         |      |                  |        |          |          |       |               |        |      |      |                | and a            |     | 124 |      |  | 1            |      |      |
| <b>2.0</b> <sup>6</sup> 7,               | Α      | 5       | B              | 0              |                | ¥        | 34.0    | 34.3 | 33.8             |        | ~        | 240      | 25,0  | 242           | -      | -    | 20   | 4.1            | 6.4              | ~   | -   | 6.73 | 7.66                                     | 673          | ~    | -    |
|  | в      | 5       | B              | 0              | S              | 1        |         |      | 34.8             |        |          |          |       | f<br>75.0     |        |      |      |                | f<br>5.8         | 88  | 100 |      |  | f.06         |      |      |
|  | с      | 5(      | Ê)             | Ô              | 2              |          |         |      |                  |        |          |          |       |               |        |      |      | 22             |                  |     |     |      |  |              |      |      |
|  | D      | 5       | B)             | 0              |                |          |         |      |                  |        |          |          | 12/1  |               |        |      |      | 199            |                  |     |     |      |  |              |      |      |
| Initial Counts QC'd by:<br>Initiated by: |        |         | 18             |                |                |          | 3 - 97. |      |                  |        |          |          |       |               |        |      |      |                |                  |     |     |      |  |              |      | _    |
| Animal Source/Date                       | Recei  | ved:    |                | A              | ßS             | 16       | 1291    | 119  |                  |        | Age a    | t Initia | ation | 1             | 5 0    | ans  |      |                |                  |     |     |      |  |              |      |      |
| Animal Acclimation                       | Qualif | iers (  | circle         |                |                |          |         |      |                  |        | 22 /     |          |       | 224           | C      | )    |      |                |                  |     |     |      |  |              |      |      |
| Comments:                                | -      | i = ini | itial re       | ading          | ) in fre       | esh te   | st solu | tion | = final          | readir | ng in te | st cha   | ambe  | prior t       | o rene | ewal |      |                |                  |     |     | 1705 |  |              |      |      |
|  | -      | Orga    | nisms          | fed p          | prior to       | o initia | ation c |      | (                | )/     | (        | pay      | Ars   | - 7/1         | 6      | DE   | 6.TE | 16-            | 2                | q   |     |      |  |              |      |      |
| QC Check:                                | 14     | P.      | 11             | 2              | 9              |          | Ð       | G/0  |                  | 57/5   | 2)/0     |          | 3)Q   | 134           | Ro     | dies | 101  | 0              | 2<br>Fin         |     |     |      |  | 1            |      |      |
| Nautilus Environmental.                  | 4340   | /ande   | ver Av         | епие.          | San L          | )iego,   | CA 921  | 2    |                  |        |          | 4        | J     |               |        | 2 6  | 1    |                |                  |     |     |      |  |              |      |      |
|  |        |         |                |                |                |          |         |      |                  |        |          | 12       | 411   |               |        |      |      |                |                  |     |     |      |  |              |      |      |

Chronic Urchin Development

# **CETIS Summary Report**

12 Jul-19 10:59 (p 1 of 1) 1907-S079 | 10-8165-0406

| Echinoid Emb  | oryo-Larval Dev   | elopmen                             | t Test                                     |   |                                     |                                     |              |                                       | Nautilus  | s Environm   | ental (CA) |
|---|---|-------------------------------------|--|---|-------------------------------------|-------------------------------------|--------------|---------------------------------------|---|--------------|------------|
| Batch ID:<br>Start Date:<br>Ending Date:<br>Duration: | 12-0176-2433<br>01 Jul-19 10:15<br>04 Jul-19 10:35<br>72h                                     | 5 P<br>5 S                          | est Type:<br>rotocol:<br>pecies:<br>ource: | Development<br>EPA/600/R-95/<br>Strongylocentro<br>Pt. Loma | . ,                                 | tus                                 |              |                                       | Norcitor<br>Applicable<br>Sic Martin<br>- Applickhu |              |            |
|   | 18-0334-5456<br><sup>®</sup> 2≵ <sup>5</sup> Jun-19 10:2<br>₀01 Jul-19 08:36<br>‰96h (6.8 °C) | 5 <b>S</b>                          | ode:<br>laterial:<br>ource:<br>tation:     | 19-0711<br>Effluent Sample<br>Starkist Samoa<br>OD Streams  |                                     |                                     | Clie<br>Proj | nt: Geo<br>ject:                      | syntec  |              |            |
| Comparison S  | Summary   |                                     |  | · · · ·   |                                     |                                     |              |                                       |   |              |            |
| Analysis ID   | Endpoint  |                                     | NOEL                                       | LOEL  | TOEL                                | PMSD                                | TU           | Method                                |   |              |            |
| 17-5095-6702  | Development F   | Rate                                | <0.06                                      | 0.06  | NA                                  | 10.4%                               | >1667        | Steel Man                             | y-One Rank  | Sum Test     |            |
| Point Estimat   | e Summary   |                                     |  |   |                                     |                                     |              | <u> </u>                              |   |              |            |
| Analysis ID   | Endpoint  |                                     | Level                                      | %   | 95% LCL                             | 95% UCL                             | TU           | Method                                |   |              |            |
| 10-7436-5405  | Development F   | Rate                                | EC25<br>EC50                               |   | 0.01413<br>0.02826                  | 0.02308<br>0.04616                  | 5628<br>2814 | Linear Inte                           | erpolation (IC                                      | CPIN)        |            |
| Test Acceptat   | oility  |                                     |  |   |                                     |                                     |              |                                       |   |              |            |
| Analysis ID   | Endpoint  |                                     | Attrib                                     | ute   | Test Stat                           | TAC Limi                            | ts           | Overlap                               | Decision  |              |            |
| 10-7436-5405  | Development F   | Rate                                | Contr                                      | ol Resp   | 0.988                               | 0.8 - NL                            |              | Yes                                   | Passes Ad   | cceptability | Criteria   |
| 17-5095-6702  | Development F   | Rate                                | Contr                                      | ol Resp   | 0.988                               | 0.8 - NL                            |              | Yes                                   | Passes Ad   | cceptability | Criteria   |
| 17-5095-6702  | Development F   | Rate                                | PMS  | )   | 0.1042                              | NL - 0.25                           |              | No                                    | Passes Ad   | cceptability | Criteria   |
| Development   | Rate Summary  |                                     |  |   |                                     |                                     |              |                                       |   |              |            |
| C-%   | Control Type  | Count                               | Mean                                       | 95% LCL   | 95% UCL                             | Min                                 | Max          | Std Err                               | Std Dev   | CV%          | %Effect    |
| 0   | Lab Control   | 5                                   | 0.988                                      | 0.9776  | 0.9984                              | 0.98                                | 1            | 0.003742                              | 0.008367  | 0.85%        | 0.0%       |
| 0.06  |   | 5                                   | 0.154                                      | 0   | 0.3701                              | 0                                   | 0.4          | 0.07782                               | 0.174   | 113.0%       | 84.41%     |
| 0.125   |   | 5                                   | 0  | 0   | 0                                   | 0                                   | 0            | 0                                     | 0   |              | 100.0%     |
| 0.25  |   | 5                                   | 0  | 0   | 0                                   | 0                                   | 0            | 0                                     | 0   |              | 100.0%     |
| 0.5   |   | 5                                   | 0  | 0   | 0                                   | 0                                   | 0            | 0                                     | 0   |              | 100.0%     |
| 4   |   | 5                                   | 0  | 0   | 0                                   | 0                                   | 0            | 0                                     | 0   |              | 100.0%     |
| 1   |   |                                     |  | ^   | <u> </u>                            | 0                                   | 0            | 0                                     | 0   |              | 100.0%     |
|   |   | 5                                   | 0  | 0   | 0                                   |                                     | 0            |                                       |   |              |            |
| 2   | Rate Detail   | 5                                   | 0  |   | 0                                   | 0                                   | 0            |                                       |   |              |            |
| 2<br>Development<br>C-%                               | Control Type  | Rep 1                               | Rep 2                                      | 2 Rep 3   | Rep 4                               | Rep 5                               |              | · · · · · · · · · · · · · · · · · · · |   |              | .8.*       |
| 2<br>Development<br>C-%<br>0                          |   |                                     | <b>Rep 2</b><br>0.99                       | 2 Rep 3<br>0.98   | <b>Rep 4</b>                        |                                     |              |                                       |   |              |            |
| 2<br>Development<br>C-%<br>0<br>0.06                  | Control Type  | Rep 1                               | Rep 2                                      | 2 Rep 3   | Rep 4                               | Rep 5                               |              |                                       | · <u>··</u> ····                                    |              |            |
| 2<br>Development<br>C-%<br>0<br>0.06<br>0.125         | Control Type  | <b>Rep 1</b><br>0.98                | <b>Rep 2</b><br>0.99                       | 2 Rep 3<br>0.98   | <b>Rep 4</b>                        | <b>Rep 5</b><br>0.99                |              |                                       |   |              |            |
| 2<br>Development<br>C-%<br>0<br>0.06<br>0.125         | Control Type  | <b>Rep 1</b><br>0.98<br>0           | <b>Rep 2</b><br>0.99<br>0.11               | 2 Rep 3<br>0.98<br>0.4                                      | <b>Rep 4</b><br>1<br>0.26           | <b>Rep 5</b><br>0.99<br>0           |              |                                       |   |              |            |
| 2<br>Development<br>C-%                               | Control Type  | <b>Rep 1</b><br>0.98<br>0<br>0      | <b>Rep 2</b><br>0.99<br>0.11<br>0          | 2 Rep 3<br>0.98<br>0.4<br>0                                 | <b>Rep 4</b><br>1<br>0.26<br>0      | <b>Rep 5</b><br>0.99<br>0<br>0      |              |                                       |   |              |            |
| 2<br>Development<br>C-%<br>0<br>0.06<br>0.125<br>0.25 | Control Type  | <b>Rep 1</b><br>0.98<br>0<br>0<br>0 | <b>Rep 2</b><br>0.99<br>0.11<br>0<br>0     | 2 Rep 3<br>0.98<br>0.4<br>0<br>0                            | <b>Rep 4</b><br>1<br>0.26<br>0<br>0 | <b>Rep 5</b><br>0.99<br>0<br>0<br>0 |              |                                       |   |              |            |

(B) & Q 14 8/15/19

Analyst: JU 04/19/1/2/19

| CETIS Ana   | alytical Repo                   | ort                    |           |                 |                 |  | -                        | ort Date:<br>Code:         |              |            | 59 (p 1 of 1)<br>D-8165-0406 |
|---|---------------------------------|------------------------|-----------|-----------------|-----------------|--|--------------------------|----------------------------|--------------|------------|------------------------------|
| Echinoid Em   | bryo-Larval Deve                | elopment Te            | est       |                 |                 |  |                          |                            | Nautilus     | s Environn | nental (CA)                  |
| Analysis ID:<br>Analyzed:   | 17-5095-6702<br>12 Jul-19 10:58 |                        |           | elopment R      |                 | Treatments   |                          | IS Version:<br>al Results: |              | .8.7       |                              |
| Data Transfo  | rm                              | Zeta                   | Alt Hyp   | Trials          | Seed            |  | PMSD                     | Test Res                   | ult          |            |                              |
| Angular (Corre  | ected)                          | NA                     | C > T     | NA              | NA              |  | 10.4%                    |                            | elopment rat | e          |                              |
| Steel Many-O  | ne Rank Sum Te                  | est                    |           |                 |                 |  |                          |                            |              |            |                              |
| Control   | vs C-%                          |                        | Test Stat | Critical        | Ties D          | F P-Value  | P-Type                   | Decision                   | (α:5%)       |            |                              |
| Lab Control   | 0.06*                           |                        | 15        | 19              | 0 8             | 0.0045   | Asymp                    | Significan                 |              |            |                              |
| ANOVA Table   | <del>)</del>                    |                        |           |                 |                 |  |                          |                            |              |            |                              |
| Source  | Sum Squ                         | ares                   | Mean Squ  | are             | DF              | F Stat   | P-Value                  | Decision(                  | (α:5%)       |            |                              |
| Between   | 3.205751                        |                        | 3.205751  |                 | 1               | 77.6   | <0.0001                  | Significan                 | t Effect     |            |                              |
| Error   | 0.3304844                       | 1                      | 0.0413105 | 5               | 8               |  |                          |                            |              |            |                              |
| Total   | 3.536235                        |                        |           |                 | 9               |  |                          |                            |              |            |                              |
| Distributiona   |                                 |                        |           |                 |                 |  |                          |                            |              |            |                              |
| Attribute   | Test                            | Detic 5                |           | Test Stat       |                 | P-Value  | Decision(                |                            |              |            |                              |
| Variances<br>Distribution   | Variance<br>Shapiro-V           | Ratio F<br>Vilk W Norm | ality     | 56.22<br>0.9104 | 23.15<br>0.7411 | 0.0018<br>0.2839   | Unequal \<br>Normal Di   |                            |              |            |                              |
|   | Rate Summary                    |                        |           |                 |                 |  |                          |                            |              |            |                              |
| C-%   | Control Type                    | Count                  | Mean      | 95% LCL         | 95% UCI         | . Median   | Min                      | Max                        | Std Err      | CV%        | %Effect                      |
| <u> </u>  | Lab Control                     | 5                      | 0.988     | 0.9776          | 0.9984          | 0.99   | 0.98                     | 1                          | 0.003742     | 0.85%      | 0.0%                         |
| 0.06  |                                 | 5                      | 0.154     | 0               | 0.3701          | 0.11   | 0                        | 0.4                        | 0.07782      | 113.0%     | 84.41%                       |
| 0.125   |                                 | 5                      | 0         | 0               | 0               | 0  | 0                        | 0                          | 0            |            | 100.0%                       |
| ).25  |                                 | 5                      | 0         | 0               | 0               | 0  | 0                        | 0                          | 0            |            | 100.0%                       |
| ).5   |                                 | 5                      | 0         | 0               | 0               | 0  | 0                        | 0                          | 0            |            | 100.0%                       |
| 1   |                                 | 5                      | 0         | 0               | 0               | 0  | 0                        | 0                          | 0            |            | 100.0%                       |
| 2   |                                 | 5                      | 0         | 0               | 0               | 0  | 0                        | 0                          | 0            |            | 100.0%                       |
| Angular (Cori   | rected) Transform               | med Summa              | ary       |                 |                 |  |                          |                            |              |            |                              |
| C-%   | Control Type                    | Count                  | Mean      | 95% LCL         | 95% UCI         | . Median   | Min                      | Max                        | Std Err      | CV%        | %Effect                      |
| D   | Lab Control                     | 5                      | 1.464     | 1.417           | 1.511           | 1.471  | 1.429                    | 1.521                      | 0.01699      | 2.6%       | 0.0%                         |
| 0.06  |                                 | 5                      | 0.3316    | -0.02219        | 0.6853          | 0.3381   | 0.05002                  | 0.6847                     | 0.1274       | 85.93%     | 77.35%                       |
| 0.125   |                                 | 5                      | 0.05002   | 0.05001         | 0.05003         | 0.05002  | 0.05002                  | 0.05002                    | 0            | 0.0%       | 96.58%                       |
| 0.25  |                                 | 5                      | 0.05002   | 0.05001         | 0.05003         | 0.05002  | 0.05002                  | 0.05002                    | 0            | 0.0%       | 96.58%                       |
| 0.5   |                                 | 5                      | 0.05002   | 0.05001         | 0.05003         | 0.05002  | 0.05002                  | 0.05002                    | 0            | 0.0%       | 96.58%                       |
| 1   |                                 | 5                      | 0.05002   | 0.05001         | 0.05003         | 0.05002  | 0.05002                  | 0.05002                    | 0            | 0.0%       | 96.58%                       |
| 2   |                                 | 5                      | 0.05002   | 0.05001         | 0.05003         | 0.05002  | 0.05002                  | 0.05002                    | 0            | 0.0%       | 96.58%                       |
| 1.0         0.9         9 | 0 LC 0.06 0.                    | 125 0.25<br><b>C-%</b> | 0.5       | <b>1</b> 2      | A)              | 0.40<br>0.35<br>0.30<br>0.25<br>0.15<br>0.10<br>0.10<br>0.10<br>0.05<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>0.005<br>00000000 | • •<br>• •<br>• •<br>• • | -1.0 -0.5 0.<br>Rank       |              | 1.5 2.0    | 2.5                          |
| 100-089-187-3   |                                 |                        |           | C               | CETIS™ v1       | .8.7.20  |                          |                            | Analyst:     | a a        | A:KEP7/12                    |

| Natilus Environmentalis       Natilus Environmental (C/         CETIS V1.8.7         CETIS V1.8.7         CETIS V1.8.7         V Transform       Y Transform       Seed       Resamples       Exp 95% CL       Method       VTV         V Transform       Y Transform       Seed       Resamples       Exp 95% CL       Method       V         V Transform       Y Transform       Seed       Resamples       Exp 95% CL       Method       V       V Transform       V Transform       V Transform       Seed       Resamples       Exp 95% CL       Method         V Transform       V Transform       V       V Transform       V       V         Point Estimate       Centrol Type       Seed       Resamples       VICL       V         Control Type       Count       Method       Method       V       V/% <th< th=""><th>CETIS</th><th>S Analyt</th><th>ical Repo</th><th>rt</th><th></th><th></th><th></th><th></th><th>-</th><th>rt Date:<br/>Code:</th><th></th><th></th><th>):59 (p 1 of 1<br/>10-8165-040</th></th<>  | CETIS   | S Analyt    | ical Repo    | rt         |       |           |         |              | -             | rt Date:<br>Code:                     |         |           | ):59 (p 1 of 1<br>10-8165-040 |
|--|---------|-------------|--------------|------------|-------|-----------|---------|--------------|---------------|---------------------------------------|---------|-----------|-------------------------------|
| Analyzed:       12 Jul-19 10:58       Analysis:       Linear Interpolation (ICPIN)       Official Results:       Yes         Linear       Name       Seed       Resamples       Exp 95% CL       Method       Image: Second Seco   | Echino  | id Embryo   | -Larval Deve | lopment Te | est   |           |         |              |               | · · · · · · · · · · · · · · · · · · · | Nautilu | s Enviror | nmental (CA                   |
| X Transform         Y Transform         Seed         Resamples         Exp 95% CL         Method           Linear         Linear         2093110         1000         Yes         Two-Point Interpolation           Point Estimates         Exp 95% CL         95% UCL         95% UCL         95% UCL         95% UCL           Ec25         0.01777         0.01413         0.02308         5628         4332         7078         3539  | -       |             |              |            |       |           |         |              |               |                                       |         | .8.7      |                               |
| Linear         2093110         1000         Yes         Two-Point Interpolation           Point Estimates         Evel         %         95% LCL         95% UCL         TU         96% LCL         95% UCL         Tuo.Point Interpolation           EC25         0.01777         0.01413         0.02308         5628         4332         7078           EC50         0.03554         0.02826         0.04616         2814         2166         3539           Development Rate Summary         Calculated Variate(A/B)         CV%         % Effect         A         B           0         Lab Control         5         0.988         0.98         1         0.003742         0.008367         0.85%         0.0%         494         500           0.125         5         0         0         0         0         100.0%         0         500           0.25         5         0         0         0         0         0         100.0%         0         500           0.24         5         0         0         0         0         0         0         500           0.25         5         0         0         0         0         0         00.0%         500   | Linear  | Interpolati | on Options   |            |       |           |         |              |               |                                       |         |           |                               |
| Control         95% LCL         95% LCL         95% UCL         950 UCL <t< td=""><td>X Trans</td><td>sform</td><td>Y Transform</td><td>See</td><td>ł</td><td>Resamples</td><td>Exp 95%</td><td>CL Meth</td><td>od</td><td></td><td></td><td></td><td></td></t<>   | X Trans | sform       | Y Transform  | See        | ł     | Resamples | Exp 95% | CL Meth      | od            |                                       |         |           |                               |
| Level         %         95% LCL         953         953         953         953         953         953         95         950 </td <td>Linear</td> <td></td> <td>Linear</td> <td>2093</td> <td>3110</td> <td>1000</td> <td>Yes</td> <td>Two-</td> <td>Point Interpo</td> <td>olation</td> <td></td> <td></td> <td></td>   | Linear  |             | Linear       | 2093       | 3110  | 1000      | Yes     | Two-         | Point Interpo | olation                               |         |           |                               |
| EC25       0.01777       0.01413       0.02308       5628       4332       7078         EC50       0.03554       0.02826       0.04616       2814       2166       3539         Calculated Variate(A/B)         Calculated Variate(A/B)         C-%       Control Type       Count       Mean       Min       Max       Std Err       Std Dev       CV%       %Effect       A       B         0.0       Lab Control       5       0.988       0.98       1       0.003742       0.08367       0.85%       0.0%       494       500         0.06       5       0.154       0       0.4       0.07782       0.174       113.0%       84.41%       77       500         0.125       5       0       0       0       0       0       0       500         0.25       5       0       0       0       0       0       500       500         0.5       5       0       0       0       0       100.0%       500         2       5       0       0       0       0       100.0%       500         Graphics   | Point E | Stimates    |              |            |       |           |         |              |               |                                       | <u></u> |           |                               |
| EC50         0.03554         0.02826         0.04616         2814         2166         3539           Calculated Variated | Level   | %           | 95% LCL      | 95% UCL    | TU    | 95% LCL   | 95% UCL |              |               |                                       |         |           |                               |
| Development Rate Summary         Calculated Variate(A/B)           C.%         Control Type         Count         Mean         Min         Max         Std Err         Std Dev         CV%         %Effect         A         B           0         Lab Control         5         0.988         0.98         1         0.003742         0.008367         0.85%         0.0%         494         500           0.06         5         0.154         0         0.4         0.07782         0.174         113.0%         84.41%         77         500           0.125         5         0         0         0         0         0         100.0%         0         500           0.25         5         0         0         0         0         0         500         500           0.5         5         0         0         0         0         100.0%         0         500           2         5         0         0         0         0         100.0%         0         500           2         5         0         0         0         0         100.0%         500           3         0.7         0.8         0.7         0.8  | EC25    | 0.01777     | 0.01413      | 0.02308    | 5628  | 4332      | 7078    |              |               |                                       |         |           |                               |
| C-%         Control Type         Count         Mean         Min         Max         Std Err         Std Dev         CV%         %Effect         A         B           0         Lab Control         5         0.988         0.98         1         0.003742         0.008367         0.85%         0.0%         494         500           0.06         5         0.154         0         0.4         0.0782         0.174         113.0%         84.41%         77         500           0.125         5         0         0         0         0         0         100.0%         0         500           0.25         5         0         0         0         0         0         100.0%         0         500           0.5         5         0         0         0         0         0         100.0%         0         500           2         5         0         0         0         0         0         500           2         5         0         0         0         0         0         100.0%         500           2         5         0         0         0         0         0         100.0%   | EC50    | 0.03554     | 0.02826      | 0.04616    | 2814  | 2166      | 3539    |              |               |                                       |         |           |                               |
| C-%         Control Type         Count         Mean         Min         Max         Std Err         Std Dev         CV%         %Effect         A         B           0         Lab Control         5         0.988         0.98         1         0.003742         0.008367         0.85%         0.0%         494         500           0.06         5         0.154         0         0.4         0.07782         0.174         113.0%         84.41%         77         500           0.125         5         0         0         0         0         0         100.0%         0         500           0.25         5         0         0         0         0         0         100.0%         0         500           0.5         5         0         0         0         0         0         500         500           2         5         0         0         0         0         0         500         500           2         5         0         0         0         0         0         100.0%         0         500           2         5         0         0         0         0         0         100.0  | Develo  | pment Rat   | e Summary    |            |       |           | Calcu   | lated Variat | te(A/B)       |                                       |         |           |                               |
| 0       Lab Control       5       0.988       0.98       1       0.003742       0.008367       0.85%       0.0%       494       500         0.06       5       0.154       0       0.4       0.07782       0.174       113.0%       84.41%       77       500         0.125       5       0       0       0       0       0       100.0%       0       500         0.25       5       0       0       0       0       0       100.0%       0       500         0.5       5       0       0       0       0       100.0%       0       500         1       5       0       0       0       0       0       100.0%       500         2       5       0       0       0       0       0       500       500         2       5       0       0       0       0       0       500       500         3       0.7       0.6       0.7       0.6       0.7       0.6       0.7       0.6         0.3       0.7       0.6       0.7       0.4       0.7       0.4       0.7       0.4       0.7       0.4       0.7<  | C-%     | Cont        | trol Type    | Count      | Mean  | Min       |         |              |               | CV%                                   | %Effect | А         | в                             |
| 0.06       5       0.154       0       0.4       0.07782       0.174       113.0%       84.41%       77       500         0.125       5       0       0       0       0       0       100.0%       0       500         0.25       5       0       0       0       0       0       100.0%       0       500         0.5       5       0       0       0       0       0       0       500         1       5       0       0       0       0       0       0       500         2       5       0       0       0       0       0       0       500         2       5       0       0       0       0       0       500       500         2       5       0       0       0       0       0       500       500      3       0.7       0.6       0.7       0.6       0.7       0.6       0.7       0.6       0.7       0.6       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7       0.7 <t< td=""><td>0</td><td></td><td></td><td>5</td><td>0.988</td><td>0.98</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>   | 0       |             |              | 5          | 0.988 | 0.98      | 1       |              |               |                                       |         |           |                               |
| 0.25 5 0 0 0 0 0 100.0% 0 500<br>0.5 5 0 0 0 0 0 0 100.0% 0 500<br>1 5 0 0 0 0 0 0 0 100.0% 0 500<br>2 5 0 0 0 0 0 0 0 100.0% 0 500<br>Graphics<br>st unoop 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 0.06    |             |              | 5          | 0.154 | 0         | 0.4     | 0.07782      | 0.174         | 113.0%                                | 84.41%  |           |                               |
| 0.5 5 0 0 0 0 0 0 100.0% 0 500<br>1 5 0 0 0 0 0 0 0 100.0% 0 500<br>2 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 0.125   |             |              | 5          | 0     | 0         | 0       | 0            | 0             |                                       | 100.0%  | 0         | 500                           |
| 1 5 0 0 0 0 0 0 100.0% 0 500<br>2 5 0 0 0 0 0 0 0 100.0% 0 500<br>Graphics<br>4 4 0.3  | 0.25    |             |              | 5          | 0     | 0         | 0       | 0            | 0             |                                       | 100.0%  | 0         | 500                           |
| 2 5 0 0 0 0 0 0 0 0 500<br>Graphics<br>1.0 0.9 0.8 0.8 0.7 0.6 0.5 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4   | 0.5     |             |              | 5          | 0     | 0         | 0       | 0            | 0             |                                       | 100.0%  | 0         | 500                           |
| Graphics   | 1       |             |              | 5          | 0     | 0         | 0       | 0            | 0             |                                       | 100.0%  | 0         | 500                           |
| 1.0<br>0.9<br>0.8<br>1.0<br>0.9<br>0.8<br>0.7<br>0.6<br>0.5<br>0.4<br>0.4<br>0.3   | 2       |             |              | 5          | 0     | 0         | 0       | 0            | 0             |                                       | 100.0%  | 0         | 500                           |
|  | -       |             |              |            |       |           |         |              |               |                                       |         |           |                               |

## **CETIS Test Data Worksheet**

| Echinoid | Embry  | o-Larval  | Develo | pment   | Test |
|----------|--------|-----------|--------|---------|------|
| Lonnoid  | LIIDIY | U"Lai vai | Develo | DILICIL | ICSL |

| Echinoid Em                             | ıbryo-l | arval                      | Deve | lopment Te | st                        |   |     | Nautilus E                              | nvironmental (CA |
|---|---------|----------------------------|------|------------|---------------------------|---|-----|---|------------------|
| Start Date:<br>End Date:<br>Sample Date | 04 J    | lul-19<br>lul-19<br>lun-19 |      | Protoc     | ol: EPA/600               | centrotus purpuratus Sample C<br>(R-95/136 (1995) Sample S<br>ater- Effund Sample S |     | 19- 0711<br>Geosyntec<br>JCO - Sturkist | Samoa Co         |
| C-%                                     | Code    | Rep                        | Pos  | # Counted  | # Normal                  | No  | tes | B                                       | apstreams        |
|   |         |                            | 36   | 100        | 26                        |   |     |   |                  |
|   |         |                            | 37   | (          | 0                         |   |     |   |                  |
|   |         |                            | 38   |            | 0                         |   |     |   |                  |
|   |         |                            | 39   |            | 0                         |   |     |   |                  |
|   |         |                            | 40   |            | 0                         |   |     |   |                  |
|   |         |                            | 41   |            | Õ                         |   |     |   |                  |
|   |         |                            | 42   |            | 0                         |   |     |   |                  |
|   |         |                            | 43   |            | 0                         |   |     |   |                  |
|   |         |                            | 44   |            | 99                        |   |     |   |                  |
|   |         |                            | 45   |            | 100                       |   |     |   |                  |
|   |         | _                          | 46   |            | 0                         |   |     |   |                  |
|   |         |                            | 47   |            | 0                         |   |     |   |                  |
|   |         |                            | 48   |            |                           |   |     |   |                  |
|   |         |                            | 49   |            | 0                         |   |     |   |                  |
|   |         |                            | 50   |            | 0                         |   |     |   |                  |
|   |         |                            | 51   |            | 0                         |   |     |   |                  |
|   |         |                            | 52   |            | 0<br>99<br>00<br>00<br>08 |   |     |   |                  |
|   |         |                            | 53   |            | 0                         |   |     |   |                  |
|   |         |                            | 54   |            | 0                         |   |     |   |                  |
|   |         |                            | 55   |            | 0                         |   |     |   |                  |
|   |         |                            | 56   |            | 98                        |   |     |   |                  |
|   |         |                            | 57   |            | Ó                         |   |     |   |                  |
|   |         |                            | 58   |            | Õ                         |   |     |   |                  |
|   |         |                            | 59   |            | 0                         |   |     |   |                  |
|   |         |                            | 60   |            | 00                        |   |     |   |                  |
|   |         |                            | 61   |            |                           |   |     |   |                  |
|   |         |                            | 62   |            | 0                         |   |     |   |                  |
|   |         |                            | 63   |            | Ŏ                         |   |     |   |                  |
|   |         |                            | 64   |            | 98                        |   |     |   | •                |
|   |         |                            | 65   |            | 0                         |   |     |   |                  |
|   |         |                            | 66   |            | 0                         |   |     |   |                  |
|   |         |                            | 67   |            | 40                        |   |     |   |                  |
|   |         |                            | 68   |            | 0                         |   |     |   |                  |
|   |         |                            | 69   |            | Õ                         |   |     |   |                  |
|   |         |                            | 70   |            | Õ                         |   |     |   |                  |

10 150 0B0 PA 7/2/19 19/19/18/18 7/24/19

Analyst: RT QA: KTP 7/12/19

# **CETIS Test Data Worksheet**

 Report Date:
 29 Jun-19 13:41 (p 1 of 1)

 Test Code:
 (907 - 5079)10-8165-0406/4078ACE6

| Echinoid | Embryo-Larval | Development | Test |
|----------|---------------|-------------|------|
|----------|---------------|-------------|------|

| Nautilus | Environmental | (CA) |
|----------|---------------|------|

| Start Date:<br>End Date:<br>Sample Date | 04 J | lul-19<br>lul-19<br>lun-19 |     | Protoc                     | ol: EPA/60 | Viocentrotus purpuratus     Sample Code:     19-0711       00/R-95/136 (1995)     Sample Source:     Geosyntec       water     Effluent     Sample Station:     180 - 5to, kish Simon Control       Notes     ODSTRUMENTS |
|---|------|----------------------------|-----|----------------------------|------------|---|
| C-%                                     | Code | Rep                        | Pos | # Counted                  | # Normal   | Notes (2) ODSTRAMS  |
| 0                                       | LC   | 1                          | 56  | 100                        | 99         |   |
| 0                                       | LC   | 2                          | 52  | 100                        |            | NOZMAL EMPILYS DEVELOPMENT  |
| 0                                       | LC   | 3                          | 64  |                            |            |   |
| 0                                       | LC   | 4                          | 45  |                            |            |   |
| 0                                       | LC   | 5                          | 44  |                            |            |   |
| 0.06                                    |      | 1                          | 40  | 100                        | 0          | SOME EMBRYG DELEWPMENT  |
| 0.06                                    |      | 2                          | 48  | 100                        |            | JONIE CEMBRY I) FORWARD   |
| 0.06                                    |      | 3                          | 67  |                            |            |   |
| 0.06                                    |      | 4                          | 36  |                            |            |   |
| 0.06                                    |      | 5                          | 37  |                            |            |   |
| 0.125                                   |      | 1                          | 66  | $(\mathcal{O}\mathcal{O})$ | Ô          | VERT DUTTLE EPUBLIC DEVENTMENT  |
| 0.125                                   |      | 2                          | 47  |                            | <u> </u>   |   |
| 0.125                                   |      | 3                          | 53  |                            |            | 2   |
| 0.125                                   |      | 4                          | 49  |                            |            |   |
| 0.125                                   |      | 5                          | 68  |                            |            |   |
| 0.25                                    |      | 1                          | 62  | 100                        | 0          | FERTILIZED EGGS   |
| 0.25                                    |      | 2                          | 57  |                            |            |   |
| 0.25                                    |      | 3                          | 39  |                            |            |   |
| 0.25                                    |      | 4                          | 51  |                            |            |   |
| 0.25                                    |      | 5                          | 69  |                            |            |   |
| 0.5                                     |      | 1                          | 59  | 100                        | 0          |   |
| 0.5                                     |      | 2                          | 54  | _                          |            |   |
| 0.5                                     |      | 3                          | 65  |                            |            |   |
| 0.5                                     |      | 4                          | 46  |                            |            |   |
| 0.5                                     |      | 5                          | 41  |                            |            |   |
| 1                                       |      | 1                          | 70  | 100                        | 0          |   |
| 1                                       |      | 2                          | 42  |                            |            |   |
| 1                                       |      | 3                          | 63  |                            |            |   |
| 1                                       |      | 4                          | 43  |                            |            |   |
| 1                                       |      | 5                          | 38  |                            |            |   |
| 2                                       |      | 1                          | 58  | 001                        | _0         |   |
| 2                                       |      | 2                          | 55  |                            |            |   |
| 2                                       |      | 3                          | 50  |                            |            |   |
| 2                                       |      | 4                          | 60  |                            |            |   |
| 2                                       |      | 5                          | 61  |                            |            |   |

@ QUETO 7/6/19

© prpa18-7/24/19

# **Marine Chronic Bioassay**

Client: Geosyntec/JCO

Sample Log No.: <u>19- 0711</u> Test No.: <u>1907 - 5 079</u>

Sample ID: Starkist Samoa Co. ODSTreamS

Water Quality Measurements

Test Species: S. purpuratus

| Start Date/Time: 7/1/2 | 019 1015 |
|------------------------|----------|
| End Date/Time: 7/4/2   | 019 1035 |

| Concentration              |       | Sal    | inity   |      |      | Tempo | erature | Site of Street, Street | D   | issolve | d Oxyg | en   |      | p     | H      |      |
|----------------------------|-------|--------|---------|------|------|-------|---------|--|-----|---------|--------|------|------|-------|--------|------|
| (% sample)                 |       | (p     | pt)     | _    |      | (°    | C)      |  |     | (m      | g/L)   |      |      | (pH ) | units) |      |
|                            | 0     | 24     | 48      | 72   | 0    | 24    | 48      | 72   | 0   | 24      | 48     | 72   | 0    | 24    | 48     | 72   |
| Lab Control                | 34.0  | 34.0   | 34.4    | 34.Z | 14.9 | 14.8  | 14.7    | 14.7   | 8.9 | 8,8     | 8.4    | 8.3  | 8,04 | 8.00  | 8.01   | 798  |
| 0.06                       | 34.3  | 34.4   | 34.4    | 34.Z | 15.0 | 14,5  | 14.6    | 14.5   | 8.8 | 8.7     | 6.6    | 8.63 | 7,98 | 7.97  | 7.83   | 7.71 |
| 0.125                      | 33.9  | 34.1   | 34:7    | 34,4 | 15.0 | 14.5  | 14.3    | 14.3   | 8.8 | G.S     | 4.4    | 3.9  | 7.92 | 7.94  | 7.7.4  | 7.48 |
| 0.25                       | 33,9  | 34.5   | 34.4    | 34.4 | 14.9 | 14.4  | 14,3    | 14.2   | 8,9 | 8.4     | 2.3    | 2.1. | 7.79 | 7.87  | 7.62   | 7.41 |
| 0.5                        | 34,2  | 34.1   | 34.4    | 34.3 | 14.9 | 14.7  | 14.6    | 14.5   | 8,8 | 8.1     | 1.4    | 1.4  | 1,53 | 7.76  | 7.51   | 7.43 |
| 1.0                        | 33,1  | 34.4   | 34.3    | 34.3 | 147  | 14.6  | 14.6    | 14.6   | 8,7 | 7.4     | 1.)    | 0.9  | 7,18 | 7.54  | 7.42   | 7.34 |
| 2.0                        | 33.6  | 34.3   | 34.2    | 342  | 14.6 | 14.6  | 14.6    | 14.6   | 8.5 | 5.6     | 0.8    | 0.9  | 6,78 | 7.13  | 7.24   | 7.18 |
|                            |       |        |         |      |      |       |         |  |     |         |        |      |      |       |        |      |
|                            |       |        |         |      |      |       |         |  |     |         |        |      |      |       |        |      |
|                            |       |        |         |      |      |       |         |  |     |         |        |      |      |       |        |      |
|                            |       |        |         |      |      |       |         |  |     |         |        |      |      |       |        |      |
|                            |       |        |         | 0    | 24   | 48    | 72      |  |     |         |        |      |      |       |        |      |
| <b>Technician Initials</b> |       |        | adings: |      | RT   | BO    | BO      |  |     |         |        |      |      |       |        |      |
|                            | Dilut | ions m | ade by: | EG   |      |       |         |  |     |         |        |      |      |       |        |      |

| Comment | s: 0 hrs:  |                  |                         |                      |         |
|---------|------------|------------------|-------------------------|----------------------|---------|
|         | 24 hrs:    |                  |                         |                      |         |
|         | 48 hrs:    | Do dropped below | 4.0 mg/L, see nepert fo | ~ additional details |         |
|         | 72 hrs:    | @@18 807/4/19    | · · · ·                 |                      |         |
| QC      | Check: PTP | 1 1              | @19792187/24/1          | 9 Final Review: 👉    | 7/24/19 |

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

### **Marine Chronic Bioassay**

# Echinoderm Larval Development Worksheet

| Client:                            | Geosyntec  | Start Date/Time: 7/1/2019 / 1015              |
|------------------------------------|--|---|
| Sample ID:                         | Starkist Samoa Co. OD STRAMS   | End Date/Time: 7/4/2019 / (035                |
| Test No.:                          | 1907-5079  | Species: <u>S. purpuratus</u>                 |
| Tech initials:<br>Injection Time:  | <u>EG</u><br>0955  | Date Collected: 5/3/19                        |
| Sperm Absorbance at 40             | 00 nm: $i_{0}$ $c \leq 6$ (target range of 0.8 - 1.0 for density of  | 4x10 <sup>6</sup> sperm/ml)                   |
| Eggs Counted:                      | $\begin{array}{c} 42 \\ \hline 46 \\ \hline 71 \\ \hline 62 \\ \hline 72 \end{array}$ Mean: $58.6 \times 50 = 2930$ (target counts of 20 eggs per vertical pass on Sec<br>slide for a final density of 1000 eggs/ml) |   |
| Initial density:<br>Final density: | $\frac{2232}{1000}  \text{eggs/ml} = \frac{2.33}{-1.0} \text{ dilution factor} \\ \frac{-1.0}{1.0} \text{ part egg stock} \\ \hline 1.43 \text{ parts seawater} \\ \hline \end{array}$                               | egg stock <u>5</u><br>seawater <u>46-5</u> ml |

Prepare the egg stock according to the calculated dilution factor. For example, if the dilution factor is 2.25, use 100 ml of existing stock (1 part) and 125 ml of dilution water (1.25 parts).

Add 100 µL sperm stock per 100mL of egg stock. For example, if you have 60mL of egg stock, add 60µL sperm stock.

Embryo Stock Fertilization Checks (Initiate test only when fertilization is ≥90%):

| Fertilization Time: 100<br>5 minutes (1st fert.) che |                        | <br>             |           | No.<br>Fert.<br>91 | No.<br><u>Unfert.</u> | <u>%</u><br>99   |                   |           |  |
|--|------------------------|------------------|-----------|--------------------|-----------------------|------------------|-------------------|-----------|--|
| 10 minutes (2nd fert. If i                           | needed)                |                  |           |                    |                       |                  |                   |           |  |
| Test Initiation Time:                                | 1015                   | -                |           | Embryo             | Stock Added:          | 0.25 ml          |                   |           |  |
| Test initiation must be w                            | /ithin 1 hour          | of fertilization | time.     |                    |                       |                  |                   |           |  |
| Test Termination:                                    |                        |                  |           |                    |                       |                  |                   |           |  |
|  | No.                    | No.              | %         |                    |                       |                  |                   |           |  |
|  | Normal                 | Abnormal         | Norma     | d                  |                       |                  |                   |           |  |
| 72-hour QC check 1 <sup>a</sup>                      | 100                    | 0                | 100       | -                  |                       |                  |                   |           |  |
| QC check 2   |                        |                  |           | -                  |                       |                  |                   |           |  |
| Comments:  | <sup>a</sup> If the em | bryo developr    | nent does | s not mee          | t the mean test       | acceptability of | criterion of 80%  | normally  |  |
|  |                        | , continue the   |           |                    |                       |                  |                   |           |  |
|  |                        |                  |           |                    |                       |                  |                   |           |  |
| QC Check:  | KTP-7                  | 1219             |           |                    |                       |                  | Final Paview:     | 3-7/24/19 |  |
|  |                        | <u></u>          |           |                    |                       |                  | T III AI INEVIEW. | 0 10 11   |  |

Nautilus Environmental. 4340 Vandever Avenue. San Diego, CA 92120.

Ammonia Data

### Total Ammonia Analysis Marine DC-0

|                 | Urchin Development, Acute Mer  |                              |                     |                    | ····· ·                        |                   |
|-----------------|--|------------------------------|---------------------|--------------------|--------------------------------|-------------------|
| DI Blank        |  | Tes                          | t Start Date:       | 7/1/201            |                                | Analyst:          |
| SW Blank        | 0.0  |                              |                     |                    | A                              | nalysis Date:     |
|                 |  |                              |                     |                    |                                | N x 1.22          |
|                 | Sample ID  | Nautilus<br>ID               | Sub-Sample<br>Date  | Test<br>Day        | NH3-N<br>(mg/L)                | Ammonia<br>(mg/L) |
|                 | Blank Spike (10 mg/L NH <sub>1</sub> )   |                              | NA                  | NA                 | 68                             | 8.3               |
|                 | Urchin 2%  | 2                            | 7/1/2019            | 0                  | 40.7                           | 497               |
|                 | Urchin 2%  | 3                            | 7/4/2019            | 3                  | *                              | -                 |
|                 | Mysid 2%   | 4                            | 7/1/2019            | 0                  | 41.2                           | 50.3              |
|                 | Mysid 2%   | 5                            | 7/3/2019            | 2                  | 34.4                           | 42.0              |
|                 | Mysid 1% A rep   | 6                            | 7/4/2019            | 4                  | 19.3                           | 23.5              |
|                 | Mysid 1% B rep   | -                            | 7/5/2019            | 4                  | 20.4                           | 24.9              |
|                 | Menidia 2%   | 7                            | 7/1/2019            | 0                  | 421                            | 51.4              |
|                 | Menidia 2%   | 8                            | 7/3/2019            | 2                  | 399                            | 48.7              |
|                 | Menidia 1%   | 9                            | 7/4/2019            | 4                  | 23.1                           | 28.2              |
|                 | Spike Check (10 mpl. NH <sub>1</sub> )   |                              | NA                  | NA                 |                                |                   |
|                 |  | -                            |                     | _                  |                                |                   |
|                 |  |                              |                     |                    |                                |                   |
|                 |  |                              |                     |                    |                                |                   |
|                 |  |                              |                     |                    |                                |                   |
|                 | Batch QA Sande   | 19-3578                      | 712/19              | NA                 | 8.0                            | 9.8               |
|                 | Sample Duplicate <sup>a</sup>  | (9-3078                      | NA                  | NA                 | 8-0                            | 98                |
|                 | Sample Duplicate + Spike <sup>a</sup>  |                              | NA                  | NA                 | 15.3                           | 187               |
|                 | Spike Check (10 mg/L NH <sub>3</sub> )   |                              | NA                  | NA                 | 68                             | 83                |
| <u>Relative</u> | Percent Difference (RPD) = [sample] (mg/L<br>[average ammonia] (r<br>Percent Recovery = [spiked sample] (mg/L<br>nominal [spike] (mg | ng/L)<br>) - [sample] (mg/L) |                     |                    | Acceptable Ra<br>Acceptable Ra |                   |
| Sample ID       | [NH <sub>3</sub> ]   | [Sample Dup]                 | Measured<br>[Spike] | Nominal<br>[Spike] | RPD                            | % Recovery        |
| Blank           | 0.0  | NA                           | 83                  | 10                 | NA                             | 83                |
|                 | 9.8  | 9.8                          | 18.7                | 10                 | 0                              | 89                |
| chQA            |  | tech er                      |                     | 18 167/2           | .1                             | 1                 |

ACT 24/19 QC Check: \_\_\_\_

Final Review:

12 7/24/19

Enthalpy Analytical. 4340 Vandever Avenue. San Diego, CA 92120.

#### **Unionized Ammonia Calculation**

| Client:    | Geosyntec  |
|------------|--|
| Test Type: | Acute Inland Silverside, Acute Mysid, Chronic Urchin Development |
| Test ID:   | 1907-S077 to S079  |
| Test Date: | 7/1/2019 - 7/4/2019  |

| Sample ID    | Test Day | Sample Type                         | Actual<br>Total Ammonia (mg/L) | Temp (C) | Salinity (ppt) | pH   | Temp (K) | I       | I Rounded | pК   | Unionized<br>Ammonia (mg/L) |
|--------------|----------|-------------------------------------|--------------------------------|----------|----------------|------|----------|---------|-----------|------|-----------------------------|
| Urchin 2%    | 0        | Initial test solution               | 49.7                           | 14.6     | 33.6           | 6.78 | 287.76   | 7.42962 | 7         | 9.33 | 0.065                       |
| Mysid 2%     | 0        | Initial test solution               | 50.3                           | 24       | 34.0           | 6.73 | 297.16   | 7.51503 | 8         | 9.34 | 0.116                       |
| Mysid 2%     | 2        | Final solution prior to renewal     | 42.0                           | 24.2     | 34.8           | 8.06 | 297.36   | 7.68607 | 8         | 9.34 | 2.001                       |
| Mysid 1% (A) | 4        | Final solution prior to termination | 23.5                           | 24.8     | 36.1           | 8.14 | 297.96   | 7.96463 | 8         | 9.34 | 1.390                       |
| Mysid 1% (B) | 4        | Final solution prior to termination | 24.9                           | 24.8     | 36.1           | 8.14 | 297.96   | 7.96463 | 8         | 9.34 | 1.473                       |
| Menidia 2%   | 0        | Initial test dilution               | 51.4                           | 24.2     | 34.0           | 6.72 | 297.36   | 7.51503 | 8         | 9.34 | 0.117                       |
| Menidia 2%   | 2        | Final solution prior to renewal     | 48.7                           | 24.6     | 35.4           | 7.88 | 297.76   | 7.81454 | 8         | 9.34 | 1.604                       |
| Menidia 1%   | 4        | Final solution prior to termination | 28.2                           | 24.6     | 35.0           | 7.78 | 297.76   | 7.72888 | 8         | 9.34 | 0.743                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |
|              |          |                                     |                                |          |                |      | 273.16   | 0.5     | 1         | 9.26 | 0.000                       |

Note in oter quality parameters used for calculation taken from bench sheets

Appendix D Reference Toxicant Test Data Acute Inland Silverside

# **CETIS Summary Report**

Report Date: Test Code: 09 Jul-19 13:21 (p 1 of 1) 190701mbra | 04-4319-5710

|  |   |         |   |   |            |              |                 | Test Code:                             |       | 1907                          |                                      | +-4019-0/1  |
|--|---|---------|---|---|------------|--------------|-----------------|--|-------|-------------------------------|--------------------------------------|-------------|
| Inland Silversi  | ide 96-h Acute S  | Surviva | l Test                                    |   |            |              |                 |  |       | Nautilu                       | s Environm                           | nental (CA) |
| Batch ID:<br>Start Date:<br>Ending Date:<br>Duration:      | 00-9967-0265<br>01 Jul-19 15:55<br>05 Jul-19 13:55<br>94h |         | Protocol:                                 | Survival (96h)<br>EPA/821/R-02-<br>Menidia beryllir<br>Aquatic Biosys | . ,        | Aquatic Real | iarch<br>ns, NH | Analyst:<br>Diluent:<br>Brine:<br>Age: |       | ed Natural<br>Applicable      | Seawater                             |             |
| Sample ID:<br>Sample Date:<br>Receive Date:<br>Sample Age: | 05 Jul-19   |         | Code:<br>Material:<br>Source:<br>Station: | 190701mbra<br>Copper chloride<br>Reference Tox<br>Copper Chlorid      | e<br>icant | <u> </u>     |                 | Client:<br>Project:                    | Inter | nal                           |                                      |             |
| Comparison S   | Summary   |         |   |   |            |              |                 |  |       |                               |                                      |             |
| Analysis ID  | Endpoint  |         | NOEL                                      | LOEL  | TOEL       | PMSD         | TU              | Meth                                   | nod   |                               |                                      |             |
| 01-7834-6127   | 96h Survival Ra   | ite     | 200                                       | 400   | 282.8      | 28.6%        |                 | Stee                                   | l Man | y-One Rank                    | Sum Test                             |             |
| Point Estimate   | e Summary   |         |   |   |            |              |                 |  |       |                               |                                      |             |
| Analysis ID  | Endpoint  |         | Level                                     | μg/L  | 95% LCL    | 95% UCL      | τu              | Meth                                   | nod   |                               |                                      |             |
| 17-4098-1084   | 96h Survival Ra   | ite     | EC50                                      | 223.6   | 193.1      | 259          |                 | Spea                                   | arman | -Kärber                       | 751 BAR III - III - III - III - IIII |             |
| Test Acceptab  | oility  |         |   |   |            |              |                 |  |       |                               |                                      |             |
| Analysis ID  | Endpoint  |         | Attrib                                    | ute   | Test Stat  | TAC Limi     | its             | Ove                                    | rlan  | Decision                      |                                      |             |
| 01-7834-6127   | 96h Survival Rate   |         | Control Resp                              |   | 0.95       | 0.9 - NL     |                 | Yes                                    |       |                               | cceptability                         | Criteria    |
| 17-4098-1084   | 96h Survival Rate   |         | Control Resp                              |   | 0.95       | 0.9 - NL     |                 | Yes                                    |       | Passes Acceptability Criteria |                                      |             |
| 96h Survival R   | Rate Summary  |         |   |   |            |              |                 |  |       |                               |                                      |             |
| C-µg/L   | Control Type  | Count   | : Mean                                    | 95% LCL   | 95% UCL    | Min          | Мах             | Std I                                  | Err   | Std Dev                       | CV%                                  | %Effect     |
| 0  | Lab Control   | 4       | 0.95                                      | 0.7909  | 1          | 0.8          | 1               | 0.05                                   |       | 0.1                           | 10.53%                               | 0.0%        |
| 50   |   | 4       | 1   | 1   | 1          | 1            | 1               | 0                                      |       | 0                             | 0.0%                                 | -5.26%      |
| 100  |   | 4       | 1   | 1   | 1          | 1            | 1               | 0                                      |       | 0                             | 0.0%                                 | -5.26%      |
| 200  |   | 4       | 0.65                                      | 0.1065  | 1          | 0.2          | 1               | 0.170                                  | 08    | 0.3416                        | 52.55%                               | 31.58%      |
| 400  |   | 4       | 0   | 0   | 0          | 0            | 0               | 0                                      |       | 0                             |                                      | 100.0%      |
| 800  |   | 4       | 0   | 0   | 0          | 0            | 0               | 0                                      |       | 0                             |                                      | 100.0%      |
| 96h Survival R   | Rate Detail   |         |   |   |            |              | *****           |  |       |                               |                                      |             |
| C-µg/L   | Control Type  | Rep 1   | Rep 2                                     | Rep 3   | Rep 4      |              |                 |  |       |                               |                                      |             |
|  | Lab Control   | 1       | 1   | 1   | 0.8        |              |                 |  |       |                               | ·········                            |             |
| 0  |   |         | 1   | 1   | 1          |              |                 |  |       |                               |                                      |             |
| 0<br>50  |   | 1       | 1   | •   |            |              |                 |  |       |                               |                                      |             |
| -  |   | 1<br>1  | 1   | 1   | 1          |              |                 |  |       |                               |                                      |             |
| 50   |   |         |   |   | 1<br>0.8   |              |                 |  |       |                               |                                      |             |
| 50<br>100  |   | 1       | 1   | 1   |            |              |                 |  |       |                               |                                      |             |

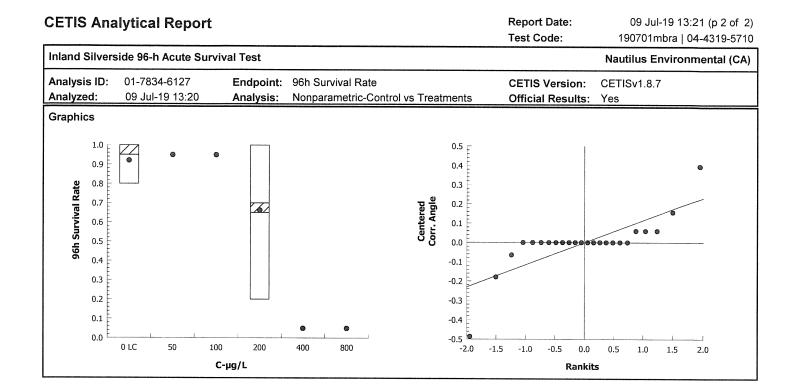
@ Eg Q18 7/11/19

| CETIS Analytical Report  |   |  |   |   |  |   |  | Report Date:<br>Test Code:                              |  | 09 Jul-19 13:21 (p 1 of 2)<br>190701mbra   04-4319-5710                 |  |  |
|--|---|--|---|---|--|---|--|---|--|---|--|--|
| Inland Silver  | rside 96-h Acute                                | ) Survival   | Test  |   | B73/2009/2010/00/00/00/00/00/00/00/00/00/00/00/00/                 |   |  |   | Nautilus   | Environn  | nental (CA)  |  |
| Analysis ID:<br>Analyzed:  | 01-7834-6127<br>09 Jul-19 13:2                  |  |   | 6h Survival Ra<br>onparametric-   | Survival Rate<br>parametric-Control vs Treatments                  |   |  | CETIS Version:<br>Official Results:                     |  | CETISv1.8.7<br>Yes  |  |  |
| Data Transfo   | orm   | Zeta   | Alt Hyp   | Trials  | Seed   |   | PMSD   | NOEL  | LOEL   | TOEL  | TU   |  |
| Angular (Corrected) NA C > T   |   |  |   | NA  | NA   |   | 28.6%  | 200   | 400  | 282.8   |  |  |
| Steel Many-C   | One Rank Sum <sup>-</sup>                       | Test   |   |   |  |   |  |   |  |   |  |  |
| Control  | vs C-µg/L                                       |  | Test Sta  | t Critical  | Ties D   | F P-Valu  | e P-Type   | Decision(   | (α:5%)   |   |  |  |
| Lab Control  | 50  |  | 20  | 10  | 1 6  |   | Asymp  |   | ficant Effect  |   |  |  |
|  | 100   |  | 20  | 10  | 1 6  | 0.9096  | Asymp  | 0   | ficant Effect  |   |  |  |
|  | 200   |  | 13  | 10  | 2 6  | 0.1689  | Asymp  | -   | ficant Effect  |   |  |  |
| ANOVA Tabl   | le  |  |   |   |  |   |  |   |  | <u> 19 Martin Marta Dispaksio ming</u>                                  |  |  |
| Source   | Sum Sq  | uares  | Mean So   | uare  | DF   | F Stat  | P-Value  | Decision(   | α:5%)  |   |  |  |
| Between  | 0.431099  |  | 0.143699  |   | 3  | 3.716   | 0.0424   | Significan  |  |   |  |  |
| Error  | 0.464098  | 38   | 0.038674  | 191   | 12   |   |  | 5   |  |   |  |  |
| Total  | 0.895198  | 36   |   |   | 15   |   |  |   |  |   |  |  |
| Distributiona  | al Tests  |  |   |   |  |   |  |   |  |   |  |  |
| Attribute  | Test  | Test Stat  | Critical  | P-Value   | e Decision   | (α:1%)  |  |   |  |   |  |  |
| Variances  | Mod Lev   | e 4.883  | 5.953   | 0.0191  | Equal Va   | riances   |  |   |  |   |  |  |
| Variances  | Levene  | 6.323  | 5.953   | 0.0081  | Unequal  |   |  |   |  |   |  |  |
| Distribution   | Shapiro   | 0.7953   | 0.8408  | 0.0024  | Non-norm   | Non-normal Distribution   |  |   |  |   |  |  |
| 96h Survival   | Rate Summary                                    |  |   |   |  |   | ning and the second  |   |  |   |  |  |
|  |   |  |   |   |  |   |  |   |  |   |  |  |
| C-µg/L   | Control Type                                    | Count  | Mean  | 95% LCL   | 95% UCL  | . Mediar  | Min  | Max   | Std Err  | CV%   | %Effect  |  |
| <b>С-µg/L</b><br>0   | Control Type                                    | Count<br>4   | <b>Mean</b><br>0.95   | <b>95% LCL</b><br>0.7909  | <b>95% UCL</b>   | - Mediar  | 0.8  | Max<br>1  | <b>Std Err</b>   | <b>CV%</b><br>10.53%  | %Effect  |  |
|  |   |  |   |   |  |   |  |   |  | 10.53%  | 0.0%   |  |
| 0  |   | 4  | 0.95  | 0.7909  | 1  | 1   | 0.8  | 1   | 0.05   |   |  |  |
| 0<br>50  |   | 4<br>4   | 0.95<br>1   | 0.7909<br>1   | 1  | 1<br>1  | 0.8<br>1   | 1<br>1  | 0.05<br>0  | 10.53%<br>0.0%  | 0.0%<br>-5.26%   |  |
| 0<br>50<br>100   |   | 4<br>4<br>4  | 0.95<br>1<br>1  | 0.7909<br>1<br>1  | 1<br>1<br>1  | 1<br>1<br>1   | 0.8<br>1<br>1  | 1<br>1<br>1   | 0.05<br>0<br>0   | 10.53%<br>0.0%<br>0.0%  | 0.0%<br>-5.26%<br>-5.26%   |  |
| 0<br>50<br>100<br>200  |   | 4<br>4<br>4<br>4   | 0.95<br>1<br>1<br>0.65  | 0.7909<br>1<br>1<br>0.1065  | 1<br>1<br>1<br>1   | 1<br>1<br>1<br>0.7  | 0.8<br>1<br>1<br>0.2   | 1<br>1<br>1<br>1  | 0.05<br>0<br>0<br>0.1708   | 10.53%<br>0.0%<br>0.0%  | 0.0%<br>-5.26%<br>-5.26%<br>31.58%   |  |
| 0<br>50<br>100<br>200<br>400<br>800  |   | 4<br>4<br>4<br>4<br>4<br>4   | 0.95<br>1<br>1<br>0.65<br>0<br>0  | 0.7909<br>1<br>1<br>0.1065<br>0   | 1<br>1<br>1<br>1<br>0  | 1<br>1<br>1<br>0.7<br>0   | 0.8<br>1<br>1<br>0.2<br>0  | 1<br>1<br>1<br>1<br>0                                   | 0.05<br>0<br>0<br>0.1708<br>0  | 10.53%<br>0.0%<br>0.0%  | 0.0%<br>-5.26%<br>-5.26%<br>31.58%<br>100.0%   |  |
| 0<br>50<br>100<br>200<br>400<br>800  | Lab Control                                     | 4<br>4<br>4<br>4<br>4<br>4   | 0.95<br>1<br>1<br>0.65<br>0<br>0  | 0.7909<br>1<br>1<br>0.1065<br>0   | 1<br>1<br>1<br>1<br>0  | 1<br>1<br>1.<br>0.7<br>0  | 0.8<br>1<br>1<br>0.2<br>0<br>0                                   | 1<br>1<br>1<br>1<br>0                                   | 0.05<br>0<br>0<br>0.1708<br>0  | 10.53%<br>0.0%<br>0.0%  | 0.0%<br>-5.26%<br>-5.26%<br>31.58%<br>100.0%   |  |
| 0<br>50<br>100<br>200<br>400<br>800<br>Аngular (Сог<br>С-µg/L<br>0                                   | Lab Control                                     | 4<br>4<br>4<br>4<br>4<br>50000000000000000000000000000                   | 0.95<br>1<br>0.65<br>0<br>0<br>nmary                                    | 0.7909<br>1<br>1<br>0.1065<br>0<br>0  | 1<br>1<br>1<br>0<br>0  | 1<br>1<br>1.<br>0.7<br>0  | 0.8<br>1<br>1<br>0.2<br>0<br>0                                   | 1<br>1<br>1<br>0<br>0                                   | 0.05<br>0<br>0.1708<br>0<br>0  | 10.53%<br>0.0%<br>0.0%<br>52.55%  | 0.0%<br>-5.26%<br>-5.26%<br>31.58%<br>100.0%<br>100.0%                                       |  |
| 0<br>50<br>100<br>200<br>400<br>800<br>Аngular (Cor<br>С-µg/L  | Lab Control<br>rrected) Transfo<br>Control Type | 4<br>4<br>4<br>4<br>4<br>ormed Sun<br>Count                              | 0.95<br>1<br>0.65<br>0<br>0<br>nmary<br>Mean                            | 0.7909<br>1<br>1<br>0.1065<br>0<br>0<br>9 <b>5% LCL</b>                           | 1<br>1<br>1<br>0<br>0<br>95% UCL                                   | 1<br>1<br>0.7<br>0<br>0   | 0.8<br>1<br>0.2<br>0<br>0<br><b>Min</b>                          | 1<br>1<br>1<br>0<br>0<br>0                              | 0.05<br>0<br>0.1708<br>0<br>0<br>Std Err                             | 10.53%<br>0.0%<br>0.0%<br>52.55%  | 0.0%<br>-5.26%<br>-5.26%<br>31.58%<br>100.0%<br>100.0%                                       |  |
| 0<br>50<br>100<br>200<br>400<br>800<br>Аngular (Сог<br>С-µg/L<br>0                                   | Lab Control<br>rrected) Transfo<br>Control Type | 4<br>4<br>4<br>4<br>4<br>5<br>ormed Sun<br>Count<br>4                    | 0.95<br>1<br>0.65<br>0<br>0<br>nmary<br><u>Mean</u><br>1.286            | 0.7909<br>1<br>1<br>0.1065<br>0<br>0<br>95% LCL<br>1.096                          | 1<br>1<br>1<br>0<br>0<br><b>95% UCL</b><br>1.475                   | 1<br>1<br>0.7<br>0<br>0<br>- <b>Mediar</b><br>1.345                 | 0.8<br>1<br>0.2<br>0<br>0<br><b>Min</b><br>1.107                 | 1<br>1<br>1<br>0<br>0<br>0<br><b>Max</b><br>1.345       | 0.05<br>0<br>0.1708<br>0<br>0<br><b>Std Err</b><br>0.05953           | 10.53%<br>0.0%<br>0.0%<br>52.55%<br><b>CV%</b><br>9.26%                 | 0.0%<br>-5.26%<br>-5.26%<br>31.58%<br>100.0%<br>100.0%<br><b>%Effect</b><br>0.0%             |  |
| 0<br>50<br>100<br>200<br>400<br>800<br><b>Angular (Cor</b><br><b>C-μg/L</b><br>0<br>50<br>100<br>200 | Lab Control<br>rrected) Transfo<br>Control Type | 4<br>4<br>4<br>4<br>4<br>5<br>7<br>med Sun<br>Count<br>4<br>4            | 0.95<br>1<br>0.65<br>0<br>0<br>nmary<br><u>Mean</u><br>1.286<br>1.345   | 0.7909<br>1<br>1<br>0.1065<br>0<br>0<br><b>95% LCL</b><br>1.096<br>1.345          | 1<br>1<br>1<br>0<br>0<br><b>95% UCL</b><br>1.475<br>1.346          | 1<br>1<br>0.7<br>0<br>0<br><b>Mediar</b><br>1.345<br>1.345          | 0.8<br>1<br>0.2<br>0<br>0<br>0<br>Min<br>1.107<br>1.345          | 1<br>1<br>1<br>0<br>0<br>Max<br>1.345<br>1.345          | 0.05<br>0<br>0.1708<br>0<br>0<br><b>Std Err</b><br>0.05953<br>0      | 10.53%<br>0.0%<br>0.0%<br>52.55%<br><b>CV%</b><br>9.26%<br>0.0%         | 0.0%<br>-5.26%<br>-5.26%<br>31.58%<br>100.0%<br>100.0%<br>- <b>%Effect</b><br>0.0%<br>-4.63% |  |
| 0<br>50<br>100<br>200<br>400<br>800<br>Аngular (Cor<br>С-µg/L<br>0<br>50<br>100                      | Lab Control<br>rrected) Transfo<br>Control Type | 4<br>4<br>4<br>4<br>4<br>9<br>9<br>9<br>7<br>med Sun<br>4<br>4<br>4<br>4 | 0.95<br>1<br>0.65<br>0<br>0<br>nmary<br>Mean<br>1.286<br>1.345<br>1.345 | 0.7909<br>1<br>1<br>0.1065<br>0<br>0<br><b>95% LCL</b><br>1.096<br>1.345<br>1.345 | 1<br>1<br>1<br>0<br>0<br><b>95% UCL</b><br>1.475<br>1.346<br>1.346 | 1<br>1<br>0.7<br>0<br>0<br><b>Mediar</b><br>1.345<br>1.345<br>1.345 | 0.8<br>1<br>0.2<br>0<br>0<br>0<br>Min<br>1.107<br>1.345<br>1.345 | 1<br>1<br>1<br>0<br>0<br>Max<br>1.345<br>1.345<br>1.345 | 0.05<br>0<br>0.1708<br>0<br>0<br><b>Std Err</b><br>0.05953<br>0<br>0 | 10.53%<br>0.0%<br>0.0%<br>52.55%<br><b>CV%</b><br>9.26%<br>0.0%<br>0.0% | 0.0%<br>-5.26%<br>31.58%<br>100.0%<br>100.0%<br><b>%Effect</b><br>0.0%<br>-4.63%<br>-4.63%   |  |

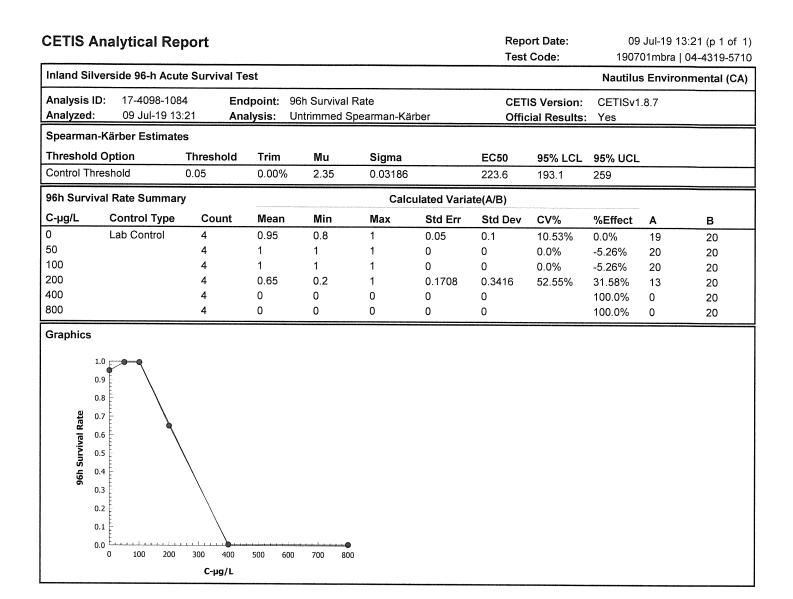
CETIS™ v1.8.7.20

Analyst: Ja QA: 1977/10/19

n N D



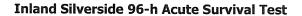
Analyst: Jac QA: KTP7/10/19

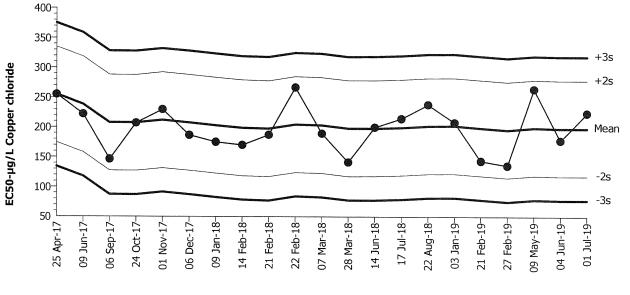


Analyst: Ja QA: KAP7/10/19

### **CETIS QC Plot**

| Inland Silverside 96-h Acute Survival Test |   |           | Nautilus Environmental (CA) |
|--|---|-----------|-----------------------------|
| Test Type: Survival (96h)                  | Organism: Menidia beryllina (Inland Silverside) | Material: | Copper chloride             |
| Protocol: EPA/821/R-02-012 (2002)          | Endpoint: 96h Survival Rate                     | Source:   | Reference Toxicant-REF      |





| Mean:  | 197.9 | Count: | 20     | -2s Warning Limit: | 117.6 | -3s Action Limit: | 77.41 |
|--------|-------|--------|--------|--------------------|-------|-------------------|-------|
| Sigma: | 40.16 | CV:    | 20.30% | +2s Warning Limit: | 278.2 | +3s Action Limit: | 318.4 |

#### **Quality Control Data**

| Point | Year | Month | Day | Time  | QC Data | Delta  | Sigma   | Warning | Action | Test ID      | Analysis ID  |
|-------|------|-------|-----|-------|---------|--------|---------|---------|--------|--------------|--------------|
| 1     | 2017 | Apr   | 25  | 17:00 | 254.9   | 57.01  | 1.42    |         |        | 20-8848-5762 | 06-2422-4286 |
| 2     |      | Jun   | 9   | 17:15 | 221.9   | 24.01  | 0.598   |         |        | 04-5405-2533 | 13-3732-1084 |
| 3     |      | Sep   | 6   | 15:50 | 146.4   | -51.49 | -1.282  |         |        | 01-8301-6131 | 10-0799-2130 |
| 4     |      | Oct   | 24  | 16:10 | 207.1   | 9.153  | 0.2279  |         |        | 10-0714-4627 | 19-6697-7894 |
| 5     |      | Nov   | 1   | 10:15 | 229.7   | 31.84  | 0.7928  |         |        | 14-0848-4500 | 09-3507-0741 |
| 5     |      | Dec   | 6   | 15:25 | 186.6   | -11.29 | -0.2812 |         |        | 17-2716-0280 | 10-6923-1723 |
| 7     | 2018 | Jan   | 9   | 16:05 | 175.2   | -22.7  | -0.5652 |         |        | 15-9782-4320 | 14-5127-3080 |
| 3     |      | Feb   | 14  | 14:50 | 170.3   | -27.63 | -0.6879 |         |        | 14-7429-6310 | 14-6416-7425 |
| Э     |      |       | 21  | 12:25 | 187.2   | -10.72 | -0.267  |         |        | 20-0148-6736 | 18-8740-2809 |
| 0     |      |       | 22  | 17:20 | 266.7   | 68.81  | 1.713   |         |        | 21-2244-9573 | 15-2512-9013 |
| 11    |      | Mar   | 7   | 16:25 | 189.3   | -8.55  | -0.2129 |         |        | 06-3891-7579 | 03-5981-6406 |
| 12    |      |       | 28  | 17:15 | 141.4   | -56.48 | -1.406  |         |        | 18-3798-9831 | 05-5342-2351 |
| 13    |      | Jun   | 14  | 14:35 | 200     | 2.1    | 0.05229 |         |        | 01-9952-0614 | 00-3575-1747 |
| 4     |      | Jul   | 17  | 14:30 | 214.4   | 16.45  | 0.4097  |         |        | 11-1445-3115 | 12-3693-5336 |
| 15    |      | Aug   | 22  | 16:25 | 237.8   | 39.94  | 0.9946  |         |        | 08-6172-7555 | 12-4329-0617 |
| 6     | 2019 | Jan   | 3   | 16:50 | 207.9   | 9.952  | 0.2478  |         |        | 16-0506-4055 | 11-1190-1934 |
| 17    |      | Feb   | 21  | 16:05 | 143.5   | -54.42 | -1.355  |         |        | 10-4228-2556 | 08-7111-9529 |
| 18    |      |       | 27  | 16:25 | 135.8   | -62.13 | -1.547  |         |        | 14-0947-0420 | 00-4247-8099 |
| 9     |      | May   | 9   | 19:10 | 263.9   | 66     | 1.643   |         |        | 03-9779-6453 | 09-3747-7536 |
| 20    |      | Jun   | 4   | 14:50 | 177.8   | -20.15 | -0.5016 |         |        | 00-2136-1210 | 01-4264-5145 |
| 21    |      | Jul   | 1   | 15:55 | 223.6   | 25.72  | 0.6403  |         |        | 04-4319-5710 | 17-4098-1084 |

#### Marine Acute Bioassay Static-Renewal Conditions

#### Water Quality Measurements & Test Organism Survival

| Client                                | : Interr  | nal    |            |                  |         |          |          |         | _                | т      | est Sp   | ecies     | : M. L  | erylli             | na       |      |     |          |                 |             |                 |                 | Τe          | ech Init     | ials    |   |
|---------------------------------------|-----------|--------|------------|------------------|---------|----------|----------|---------|------------------|--------|----------|-----------|---------|--------------------|----------|------|-----|----------|-----------------|-------------|-----------------|-----------------|-------------|--------------|---------|---|
| Sample ID                             | : CuCl    | 2      |            |                  |         |          |          |         | -                | Star   | t Date   | /Time     | : 7/1/  | 2019               | 1        | 555  | 5   |          | _               |             |                 | 0               | 24          | 48           | 72      | 96  |
| Test No.                              | : 1907    | 01ml   | bra        |                  |         |          |          |         | -                | End    | d Date   | /Time     | : 7/5/  | 2019               | _ţ.      | 35:  | 5   |          | -               | c           | ounts           | <u>Þr</u>       |             | <u>Son</u>   |         | RT  |
|                                       |           |        |            |                  |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             | dings           |                 | RT          | _            |         | RT  |
|                                       |           |        |            |                  |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             | ade by          | 000             | <u> </u>    | BO           | 1       |   |
|                                       |           |        |            |                  |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          | conc.           |             |                 | : 800<br>: 17,2 |             | 4.3          | -       |   |
|                                       |           |        |            |                  |         |          |          |         | Cu st            | ock co | oncent   | ration    | (μg/L): | 93                 | 00       | 0    |     |          | Final \         |             |                 | 2000            | 12000       | 2000         | -       |   |
| ·····                                 | ·····     |        |            |                  |         |          | 11       |         |                  |        |          | 8         |         |                    | <i>f</i> |      | -   |          |                 |             | , ( <u>-</u> ). | L               | 1.525076026 | 1            | Land    |   |
| Concentration<br>(µg/L)               | Rand<br># |        |            | nber o<br>rganis |         | •        |          | -       | Salinit<br>(ppt) | -      | -        |           | Tei     | npera<br>(°C)      | ture     |      |     | Disso    | lved (<br>(mg/L |             | n               |                 |             | pH<br>(units | )       |   |
|                                       | ļ         | 0      | 24         | 48               | 72      | 96       | 0        | 24      | 48               | 72     | 96       | 0         | 24      | 48                 | 72       | 96   | 0   | 24       | 48              | 72          | 96              | 0               | 24          | 48           | 72      | 96  |
| Lab Control                           | 19        | 5      | 5          | 5                | 5       | 5        | 29.8     | 295     |                  |        | 20.0     | 24.2      | 253     | 242                | 25,4     | 75.( | 20  | 51       | i<br>6.6        | 5.6         | 5.T             | 804             | 7.13        | 7.86         | 7:78    | 7.72                                      |
|                                       | 14        | 5      | 5          | 5                | 5       | 5        |          |         | 29.5             |        |          |           |         | 25,4               |          |      |     |          | 5.4             |             |                 |                 |             | 1<br>7.41    |         |   |
|                                       | 6         | 5      | 5          | 5                | 5       | 5        |          | ļ       | ļ                | ļ      |          |           |         |                    |          |      |     |          |                 | ļ           | ļ               |                 |             |              |         |   |
|                                       | 24        | 5      | 4          | 4                | 4       | 4        |          |         | 1                |        |          |           |         |                    |          |      |     | <u> </u> |                 |             |                 |                 |             |              |         |   |
| 50                                    | 11        | 5      | 5          | 5                | 5       | 5        | 29.2     | 29.7    | 300              | 29.7   | 30.1     | Z4.1      | 25.6    |                    |          | 256  | 6.8 | 4.9      |                 | 5.6         | 5.2             | 8.00            |             |              | 7.76    | ,7J                                       |
|                                       | 20        | 5      | 5          | 5                | 5       | 5        |          |         | 299.9            |        |          |           |         | <sup>1</sup> 253   |          |      | ļ   |          | f.6             |             |                 | <u> </u>        |             | 7.70         |         |   |
|                                       | 1         | 5      | 5          | 2                | 5       | 5        |          | -       |                  |        |          | ļ         |         |                    |          |      |     | <u> </u> |                 |             |                 |                 | L           |              |         |   |
|                                       | 7         | 5      | 5          | 5                | 5       | 5        | 2013     |         |                  |        |          |           |         | i                  |          |      |     |          | 1               |             |                 | <u> </u>        |             | i            | <b></b> |   |
| 100                                   | 5<br>9    | 5      | 5          | 5                | 5       | 5        | 29.5     | 29,4    | 29.9<br>1        | 60.1   | 20.7     | 24.2      |         |                    | 25.2     | 25,9 | 6.8 | 5.1      | f               | 5.4         | 5.2             | 8.01            | 7.76        | F I          | 7.72    | 7.7                                       |
|                                       | 18        | 5      | 5          | P                | 5       | 5        |          |         | 'aq              |        |          |           |         | 25.0               |          |      |     |          | 55              |             |                 | <u> </u>        | <u> </u>    | 770          |         |   |
|                                       | 2         | 5      | 5          | 5                | 55      | S<br>S   |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             |                 |                 |             |              |         |   |
|                                       | 21        | 5      | 3          | 17               | 3       | 3        | די גור   | 20 -    | iaca             | 200    | 101      | 247       | nre     | i                  | -        | 017  | 13  | 1        | 100             |             | 10              | -               |             | i.           |         | 7 2-                                      |
| 200                                   | 4         | 5<br>5 | 1          |                  | 2       | 3        | 24,5     | 129. 1  | 19.9             | 101,7  | 1.42     | 21.2      | 15.3    | 29.2               | 13.5     | 0.1  | 6.0 | 2.4      | 9,8<br>5,5      | 3.5         | 5.0             | 799             | 1.80        | f            | 7:74    | */0                                       |
|                                       | 17        | 5      | 5          | 5                | 5       | 5        |          |         | <i>v</i> I, (    |        |          |           | 0.000   | C.S. of            |          |      |     |          | 2'3             |             |                 | $\vdash$        |             | 773          |         |   |
|                                       | 22        | 5      | 4          | ú                | 4       | Ĩ        |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             |                 |                 |             |              |         |   |
| 400                                   | 10        | 5      | $\cap$     |                  |         |          | 29.2     | 293     | i<br>            | •      | -        | 24.1      | 255     | i<br>              | -        | 1    | 6.8 | 4.9      | i 🖵             | 10.0000<br> | •               | 7.98            | 173         | i<br>        |         |   |
|                                       | 23        | 5      | 0          |                  |         |          |          | - 1,-   | f                |        |          |           |         | :<br><del>15</del> | ich      |      |     | 1.       | f<br>سور        |             |                 | 1.10            | 1.13        | f            |         |   |
|                                       | 12        | 5      | $\bigcirc$ | D                | 1       | /        |          |         |                  |        |          |           | ۵       | 18 101             | 7/2/     | *    |     |          |                 |             |                 |                 |             |              |         |   |
|                                       | 8         | 5      | Ċ          | 0                | N       | /        |          |         |                  |        |          |           | 19.5    |                    |          |      |     |          |                 |             |                 |                 |             |              |         |   |
| 800                                   | 16        | 5      | O          | P                | 7       |          | 291.Z    | 29,3    | i                | -      | -        | 24.0      | 25,4    | i                  | -        | ~    | 6.8 | 5.3      | 1               | -           | -               | 795             | 7.74        | -            | ~       | -   |
|                                       | 13        | 5      | 0          |                  |         |          |          |         | f                |        |          |           |         | f                  |          |      |     |          | f<br>-          |             |                 |                 |             | f            |         |   |
|                                       | 3         | 5      | 0          |                  |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             |                 |                 |             |              |         |   |
|                                       | 15        | 5      | Õ/         |                  |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             |                 |                 |             |              | 1000    | in an |
| Rand # QC:<br>Initial Counts QC'd by: | DM 0      | ·      | 14         |                  |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             |                 |                 |             |              |         |   |
| Initiated by:                         | DM        |        | -          | A                | RC      | )        |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             |                 |                 |             |              |         |   |
| Animal Source/Date F                  | Receive   | d:     | B          | A)               | 85      | 16       | 129      | /19     |                  |        | Age a    | nt Initia | ation:  | 1                  | 2        | ling | 5   |          |                 |             |                 |                 | Feed        | ding Ti      | mes     |   |
| Animal Acclimation Q                  | ualifier  | s (cir | cle al     | ll that          | appl    | y):      |          |         |                  | _(a    | 22 ]     | ) Q23     | 10      |                    | / no     |      |     |          |                 |             |                 | 0               | 24          | 48           | 72      | 96  |
|                                       |           |        |            |                  |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          |                 |             | AM:             |                 | 0900        | 0520         | 1000 0  | ACÒ                                       |
| Comments:                             |           |        |            |                  |         |          |          |         | $\sim$           | 1      | ng in te |           |         |                    |          |      |     |          | 1               |             | PM:             | 1705            |             |              |         |   |
|                                       |           | Urga   | inism:     | s ted p          | orior t | o initia | ition, c | arcle o | ne(y             | )/ n   | ) (      | DRI       | \$ Ar   | <u>5 2/j</u>       | 16       | رمى  | 240 | 218 7    | 11/19           |             |                 |                 |             |              |         |   |
| QC Check:                             | KFY       | 27     | 10         | 19               |         |          |          |         |                  |        |          |           |         |                    |          |      |     |          | Fir             | nal Re      | view:           | ĒĹ              | ; =         | 2/11         | 119     |   |
| Nautilus Environmental.               | 4340 Van  | dever  | Aven       | ue. Sa           | n Die   | go, CA   | 92120.   |         |                  |        |          |           |         |                    |          |      |     |          |                 |             |                 |                 | <u> </u>    | -+           | ┟┽╌╋╌╸  |   |

Acute Mysid Shrimp

# **CETIS Summary Report**

Report Date: Test Code: 09 Jul-19 13:31 (p 1 of 1) 190701myra | 00-3054-5973

|                |                             |                                 |            |                 |             |               |          | Test Code:  |                 | 1907        |  | J-3054-5973   |
|----------------|-----------------------------|---------------------------------|------------|-----------------|-------------|---------------|----------|-------------|-----------------|-------------|--|---------------|
| Mysid 96-h Ac  | ute Survival Te             | st                              |            |                 |             |               |          |             |                 | Nautilu     | s Environm                             | nental (CA)   |
| Batch ID:      | 14-9760-7969                |                                 | Test Type: | Survival (96h)  |             |               |          | Analyst:    |                 |             |  |               |
| Start Date:    | 01 Jul-19 15:20             | )                               | Protocol:  | EPA/821/R-02-   | 012 (2002)  |               |          | Diluent:    | Dilut           | ed Natural  | Seawater                               |               |
| Ending Date:   | 05 Jul-19 13:50             | )                               | Species:   | Americamysis I  | bahia       |               |          | Brine:      | Not A           | Applicable  |  |               |
| Duration:      | 94h                         |                                 | Source:    | Aquatic Biosyst | ems, CO     |               |          | Age:        | 5d              |             |  |               |
| Sample ID:     | 18-6400-7568                |                                 | Code:      | 190701myra      |             |               |          | Client:     | Inter           | nal         |  |               |
| Sample Date:   | 01 Jul-19                   |                                 | Material:  | Copper chloride | ;           |               |          | Project:    |                 |             |  |               |
| Receive Date:  |                             |                                 | Source:    | Reference Toxi  | cant        |               |          |             |                 |             |  |               |
| Sample Age:    | 15h                         |                                 | Station:   | Copper Chlorid  | e           |               |          |             |                 |             |  |               |
| Comparison S   | Summary                     |                                 |            |                 |             |               |          |             |                 |             |  |               |
| Analysis ID    | Endpoint                    |                                 | NOEL       | LOEL            | TOEL        | PMSD          | TU       | Metl        | hod             |             |  |               |
| 06-8016-8631   | 48h Survival Ra             |                                 | 200        | 400             | 282.8       | 25.0%         |          |             |                 |             | parison Tes                            |               |
| 04-9395-4031   | 96h Survival Ra             | ate                             | 100        | 200             | 141.4       | 18.0%         |          | Duni        | nett M          | ultiple Com | parison Tes                            | st            |
| Point Estimate | e Summary                   |                                 |            |                 |             |               |          |             |                 |             |  |               |
| Analysis ID    | Endpoint                    |                                 | Level      | µg/L            | 95% LCL     | 95% UCL       | TU       | Metl        | nod             |             |  |               |
| 12-7174-3681   | 48h Survival Ra             |                                 | EC50       | 282.8           | 232.8       | 343.7         |          | Spea        | arman           | Kärber      |  |               |
| 13-1376-7861   | 96h Survival Ra             | ate                             | EC50       | 229.7           | 192.5       | 274.1         |          | Spea        | Spearman-Kärber |             |  |               |
| 48h Survival F | Rate Summary                |                                 |            |                 |             |               |          |             |                 |             |  |               |
|                | Control Type                | Cour                            | nt Mean    | 95% LCL         | 95% UCL     | Min           | Max      | Std         | Err             | Std Dev     | CV%                                    | %Effect       |
|                | Lab Control                 | 4                               | 1          | 1               | 1           | 1             | 1        | 0           |                 | 0           | 0.0%                                   | 0.0%          |
| 50             |                             | 4                               | 1          | 1               | 1           | 1             | 1        | 0           |                 | 0           | 0.0%                                   | 0.0%          |
| 100            |                             | 4                               | 0.95       | 0.7909          | 1           | 0.8           | 1        | 0.05        |                 | 0.1         | 10.53%                                 | 5.0%          |
| 200            |                             | 4                               | 0.8        | 0.4325          | 1           | 0.6           | 1        | 0.11        |                 | 0.2309      | 28.87%                                 | 20.0%         |
| 400            |                             | 4                               | 0.25       | 0               | 0.6504      | 0             | 0.6      | 0.12        | 58              | 0.2517      | 100.7%                                 | 75.0%         |
| 800            |                             | 4                               | 0          | 0               | 0           | 0             | 0        | 0           |                 | 0           | ************************************** | 100.0%        |
| 96h Survival F |                             | <b>C</b>                        |            | 051( 1.0)       | 0.5%/ 11.01 |               |          |             | _               |             | -                                      |               |
|                | Control Type<br>Lab Control | Cour<br>4                       | nt Mean    | 95% LCL         |             |               | Max      |             | Err             | Std Dev     | CV%                                    | %Effect       |
| 50             | Lab Control                 | 4<br>4                          | 1          | 1<br>1          | 1<br>1      | 1<br>1        | 1<br>1   | 0           |                 | 0           | 0.0%                                   | 0.0%          |
| 100            |                             | 4                               | 0.9        | 0.7163          | 1           | 0.8           | 1        | 0<br>0.05   | 771             | 0<br>0.1155 | 0.0%<br>12.83%                         | 0.0%<br>10.0% |
| 200            |                             | 4                               | 0.75       | 0.4453          | 1           | 0.6           | 1        | 0.00        |                 | 0.1135      | 25.53%                                 | 25.0%         |
| 400            |                             | 4                               | 0.05       | 0               | 0.2091      | 0             | ,<br>0.2 | 0.05        |                 | 0.1010      | 200.0%                                 | 95.0%         |
| 800            |                             | 4                               | 0          | 0               | 0           | 0             | 0        | 0           |                 | 0           | 200.070                                | 100.0%        |
| 48h Survival F | Rate Detail                 | ita ita ani kanang mang ang ang |            |                 |             |               |          |             |                 |             |  |               |
|                | Control Type                | Rep                             | 1 Rep 2    | Rep 3           | Rep 4       |               |          |             |                 |             |  |               |
| 0              | Lab Control                 | 1                               | 1          | 1               | 1           | ************* |          | *********** |                 |             |  |               |
| 50             |                             | 1                               | 1          | 1               | 1           |               |          |             |                 |             |  |               |
| 100            |                             | 1                               | 1          | 1               | 0.8         |               |          |             |                 |             |  |               |
| 200            |                             | 1                               | 1          | 0.6             | 0.6         |               |          |             |                 |             |  |               |
| 400            |                             | 0.2                             | 0.6        | 0               | 0.2         |               |          |             |                 |             |  |               |
| 800            |                             | 0                               | 0          | 0               | 0           |               |          |             |                 |             |  |               |
| 96h Survival F | Rate Detail                 |                                 |            |                 |             |               |          |             |                 |             |  |               |
|                | Control Type                | Rep                             |            | Rep 3           | Rep 4       |               |          |             |                 |             |  |               |
|                | Lab Control                 | 1                               | 1          | 1               | 1           |               |          |             |                 |             |  |               |
| 50             |                             | 1                               | 1          | 1               | 1           |               |          |             |                 |             |  |               |
| 100            |                             | 0.8                             | 1          | 1               | 0.8         |               |          |             |                 |             |  |               |
| 200            |                             | 1                               | 0.8        | 0.6             | 0.6         |               |          |             |                 |             |  |               |
| 400            |                             | 0                               | 0.2        | 0               | 0           |               |          |             |                 |             |  |               |
| 800            |                             | 0                               | 0          | 0               | 0           |               |          |             |                 |             |  |               |

| CETIS An                  | alytical Rep                   | ort           |               |                            | -                    | oort Date:         09 Jul-19 13:31 (p 1 d)           t Code:         190701myra   00-3054- |           |                              |                 |  |             |
|---------------------------|--------------------------------|---------------|---------------|----------------------------|----------------------|--|-----------|------------------------------|-----------------|--|-------------|
| Mysid 96-h A              | Acute Survival Te              | est           |               |                            |                      |  |           |                              | Nautilus        | Environn                               | nental (CA) |
| Analysis ID:<br>Analyzed: | 06-8016-8631<br>09 Jul-19 13:3 |               | •             | Survival Ra<br>ametric-Con | ite<br>itrol vs Trea | tments   |           | IS Version:<br>cial Results: | CETISv1.<br>Yes | 8.7                                    |             |
| Data Transfo              | orm                            | Zeta          | Alt Hyp       | Trials                     | Seed                 |  | PMSD      | NOEL                         | LOEL            | TOEL                                   | TU          |
| Angular (Corr             | rected)                        | NA            | C > T         | NA                         | NA                   |  | 25.0%     | 200                          | 400             | 282.8                                  |             |
| Dunnett Mul               | Itiple Compariso               | n Test        |               |                            |                      |  |           |                              |                 |  |             |
| Control                   | vs C-µg/L                      |               | Test Stat     | Critical                   | MSD DF               | P-Value  | P-Type    | Decision(                    | α:5%)           |  |             |
| Lab Control               | 50                             |               | 0             | 2.356                      | 0.298 6              | 0.8000   | CDF       | Non-Signif                   | icant Effect    | ······································ | *****       |
|                           | 100                            |               | 0.4706        | 2.356                      | 0.298 6              | 0.6174   | CDF       | Non-Signif                   | icant Effect    |  |             |
|                           | 200                            |               | 1.815         | 2.356                      | 0.298 6              | 0.1264   | CDF       | Non-Signif                   | icant Effect    |  |             |
|                           | 400*                           |               | 6.605         | 2.356                      | 0.298 6              | <0.0001  | CDF       | Significant                  | Effect          |  |             |
| ANOVA Tabl                | le                             |               |               |                            |                      |  |           |                              |                 |  |             |
| Source                    | Sum Squ                        | lares         | Mean Squ      | are                        | DF                   | F Stat   | P-Value   | Decision(                    | a:5%)           |  |             |
| Between                   | 2.005743                       |               | 0.5014356     |                            | 4                    | 15.67  | <0.0001   | Significant                  | Effect          |  |             |
| Error                     | 0.480064                       | 3             | 0.0320042     | 9                          | 15                   |  |           | 0                            |                 |  |             |
| Total                     | 2.485807                       |               |               |                            | 19                   |  |           |                              |                 |  |             |
| Distributiona             | al Tests                       |               |               |                            |                      |  |           |                              |                 |  |             |
| Attribute                 | Test                           |               |               | Test Stat                  | Critical             | P-Value  | Decision  | (α:1%)                       |                 |  |             |
| Variances                 | Mod Lev                        | ene Equalit   | y of Variance | 3.76                       | 4.893                | 0.0260   | Equal Var | iances                       |                 |  |             |
| Variances                 |                                | Equality of \ |               | 7.006                      | 4.893                | 0.0022   | Unequal \ |                              |                 |  |             |
| Distribution              |                                | Wilk W Nor    |               | 0.9056                     | 0.866                | 0.0526   | Normal D  |                              |                 |  |             |
| 48h Survival              | I Rate Summary                 |               |               |                            |                      |  |           |                              |                 |  |             |
| C-µg/L                    | Control Type                   | Count         | Mean          | 95% LCL                    | 95% UCL              | Median   | Min       | Max                          | Std Err         | CV%                                    | %Effect     |
| 0                         | Lab Control                    | 4             | 1             | 1                          | 1                    | 1  | 1         | 1                            | 0               | 0.0%                                   | 0.0%        |
| 50                        |                                | 4             | 1             | 1                          | 1                    | 1  | 1         | 1                            | 0               | 0.0%                                   | 0.0%        |
| 100                       |                                | 4             | 0.95          | 0.7909                     | 1                    | 1  | 0.8       | 1                            | 0.05            | 10.53%                                 | 5.0%        |
| 200                       |                                | 4             | 0.8           | 0.4325                     | 1                    | 0.8  | 0.6       | 1                            | 0.1155          | 28.87%                                 | 20.0%       |
| 400                       |                                | 4             | 0.25          | 0                          | 0.6504               | 0.2  | 0         | 0.6                          | 0.1258          | 100.7%                                 | 75.0%       |
| 800                       |                                | 4             | 0             | 0                          | 0                    | 0  | 0         | 0                            | 0               |  | 100.0%      |
| Angular (Co               | rrected) Transfor              | rmed Sumr     | nary          |                            |                      |  |           |                              |                 |  |             |
| C-µg/L                    | Control Type                   | Count         | Mean          | 95% LCL                    | 95% UCL              | Median   | Min       | Max                          | Std Err         | CV%                                    | %Effect     |
| 0                         | Lab Control                    | 4             | 1.345         | 1.345                      | 1.346                | 1.345  | 1.345     | 1.345                        | 0               | 0.0%                                   | 0.0%        |
| 50                        |                                | 4             | 1.345         | 1.345                      | 1.346                | 1.345  | 1.345     | 1.345                        | 0               | 0.0%                                   | 0.0%        |
| 100                       |                                | 4             | 1.286         | 1.096                      | 1.475                | 1.345  | 1.107     | 1.345                        | 0.05953         | 9.26%                                  | 4.43%       |
| 200                       |                                | 4             | 1.116         | 0.6938                     | 1.538                | 1.116  | 0.8861    | 1.345                        | 0.1326          | 23.76%                                 | 17.07%      |
|                           |                                | 4             | 0.5097        | 0.07234                    | 0.9471               | 0.4636   | 0.2255    | 0.0061                       | 0 4074          | FO 000/                                |             |
| 400                       |                                | 4             | 0.5097        | 0.07234                    | 0.9471               | 0.4050   | 0.2255    | 0.8861                       | 0.1374          | 53.93%                                 | 62.11%      |

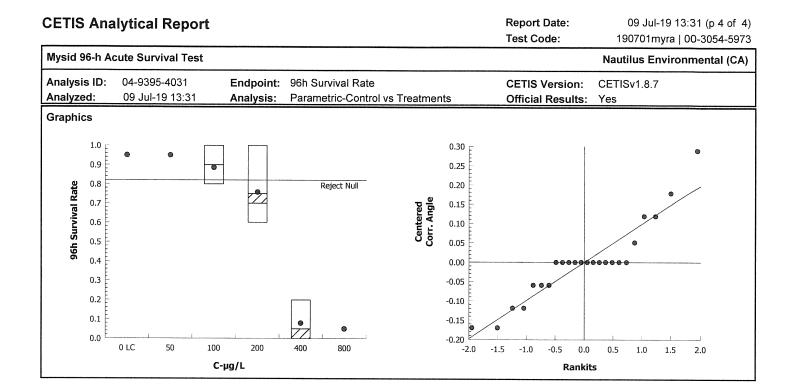
Analyst: JCL QA: EG 7/11/19

#### **CETIS Analytical Report** Report Date: 09 Jul-19 13:31 (p 2 of 4) Test Code: 190701myra | 00-3054-5973 Mysid 96-h Acute Survival Test Nautilus Environmental (CA) Analysis ID: 06-8016-8631 Endpoint: 48h Survival Rate **CETIS Version:** CETISv1.8.7 Analyzed: 09 Jul-19 13:31 Analysis: Parametric-Control vs Treatments Official Results: Yes Graphics 1.0 0.40 E 4 0.35 0.9 0.30 0.8 0.25 48h Survival Rate 0.20 Reject Null Centered Corr. Angle 0.7 0.15 0.6 0.10 .... 0.05 0.5 0.00 ...... 0.4 -0.05 . -0.10 0.3 -0.15 77 0 0.2 -0.20 -0.25 0.1 -0.30 0 0.0 -0.35 0 LC 50 100 200 400 800 -1.5 -2.0 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0 C-µg/L Rankits



| CETIS An                  | alytical Rep                   | ort           |               |                            |                       |                 |                 | ort Date:<br>Code: |                   |                  | 31 (p 3 of 4)<br>0-3054-5973 |
|---------------------------|--------------------------------|---------------|---------------|----------------------------|-----------------------|-----------------|-----------------|--------------------|-------------------|------------------|------------------------------|
| Mysid 96-h A              | Acute Survival Te              | est           |               |                            |                       |                 |                 |                    | Nautilus          | Environn         | nental (CA)                  |
| Analysis ID:<br>Analyzed: | 04-9395-4031<br>09 Jul-19 13:3 |               | •             | Survival Ra<br>ametric-Cor | ate<br>itrol vs Treat | tments          |                 | IS Version         |                   | 8.7              |                              |
| Data Transfo              | orm                            | Zeta          | Alt Hyp       | Trials                     | Seed                  |                 | PMSD            | NOEL               | LOEL              | TOEL             | TU                           |
| Angular (Cor              | rected)                        | NA            | C > T         | NA                         | NA                    |                 | 18.0%           | 100                | 200               | 141.4            |                              |
| Dunnett Mul               | Itiple Compariso               | n Test        |               |                            |                       |                 |                 |                    |                   |                  |                              |
| Control                   | vs C-µg/L                      |               | Test Stat     | Critical                   | MSD DF                | P-Value         | P-Type          | Decision           | (α:5%)            |                  |                              |
| Lab Control               | 50                             |               | 0             | 2.356                      | 0.212 6               | 0.8000          | CDF             | Non-Sign           | ificant Effect    |                  |                              |
|                           | 100                            |               | 1.322         | 2.356                      | 0.212 6               | 0.2599          | CDF             | Non-Sign           | ificant Effect    |                  |                              |
|                           | 200*                           |               | 3.211         | 2.356                      | 0.212 6               | 0.0098          | CDF             | Significar         | nt Effect         |                  |                              |
|                           | 400*                           |               | 11.77         | 2.356                      | 0.212 6               | <0.0001         | CDF             | Significar         | nt Effect         |                  |                              |
| ANOVA Tabl                | le                             |               |               |                            |                       |                 |                 |                    |                   |                  |                              |
| Source                    | Sum Squ                        | ares          | Mean Squ      | are                        | DF                    | F Stat          | P-Value         | Decision           | (α:5%)            |                  |                              |
| Between                   | 3.162457                       |               | 0.7906142     |                            | 4                     | 48.75           | <0.0001         | Significar         | nt Effect         |                  |                              |
| Error                     | 0.243287                       | 1             | 0.0162191     | 4                          | 15                    |                 |                 | •                  |                   |                  |                              |
| Total                     | 3.405744                       |               |               |                            | 19                    |                 |                 |                    |                   |                  |                              |
| Distribution              | al Tests                       | a             |               |                            |                       |                 |                 |                    |                   |                  |                              |
| Attribute                 | Test                           |               |               | Test Stat                  | Critical              | P-Value         | Decision        | (α:1%)             |                   |                  |                              |
| Variances                 | Mod Lev                        | ene Equalit   | y of Variance | 3.938                      | 4.893                 | 0.0222          | Equal Var       | iances             |                   |                  |                              |
| Variances                 | Levene E                       | Equality of V | Variance      | 8.631                      | 4.893                 | 0.0008          | Unequal \       | /ariances          |                   |                  |                              |
| Distribution              | Shapiro-                       | Wilk W Nor    | mality        | 0.9183                     | 0.866                 | 0.0921          | Normal D        | istribution        |                   |                  |                              |
| 96h Surviva               | I Rate Summary                 |               |               |                            |                       |                 |                 |                    |                   |                  |                              |
| C-µg/L                    | Control Type                   | Count         | Mean          | 95% LCL                    | 95% UCL               | Median          | Min             | Max                | Std Err           | CV%              | %Effect                      |
| 0                         | Lab Control                    | 4             | 1             | 1                          | 1                     | 1               | 1               | 1                  | 0                 | 0.0%             | 0.0%                         |
| 50                        |                                | 4             | 1             | 1                          | 1                     | 1               | 1               | 1                  | 0                 | 0.0%             | 0.0%                         |
| 100                       |                                | 4             | 0.9           | 0.7163                     | 1                     | 0.9             | 0.8             | 1                  | 0.05774           | 12.83%           | 10.0%                        |
| 200                       |                                | 4             | 0.75          | 0.4453                     | 1                     | 0.7             | 0.6             | 1                  | 0.09574           | 25.53%           | 25.0%                        |
| 400                       |                                | 4             | 0.05          | 0                          | 0.2091                | 0               | 0               | 0.2                | 0.05              | 200.0%           | 95.0%                        |
| 800                       |                                | 4             | 0             | 0                          | 0                     | 0               | 0               | 0                  | 0                 |                  | 100.0%                       |
| Angular (Co               | rrected) Transfo               | med Sumi      | mary          |                            |                       |                 |                 |                    |                   |                  |                              |
| C-µg/L                    | Control Type                   | Count         | Mean          | 95% LCL                    | 95% UCL               | Median          | Min             | Max                | Std Err           | CV%              | %Effect                      |
| •                         | Lab Control                    | 4             | 1.345         | 1.345                      | 1.346                 | 1.345           | 1.345           | 1.345              | 0                 | 0.0%             | 0.0%                         |
| 0                         |                                | 4             | 1.345         | 1.345                      | 1.346                 | 1.345           | 1.345           | 1.345              | 0                 | 0.0%             | 0.0%                         |
| 0<br>50                   |                                | 4             |               |                            |                       |                 |                 |                    |                   |                  |                              |
|                           |                                | 4             | 1.226         | 1.007                      | 1.445                 | 1.226           | 1.107           | 1.345              | 0.06874           | 11.21%           | 8.85%                        |
| 50                        |                                |               |               | 1.007<br>0.7075            | 1.445<br>1.405        | 1.226<br>0.9966 | 1.107<br>0.8861 | 1.345<br>1.345     | 0.06874<br>0.1096 | 11.21%<br>20.75% | 8.85%<br>21.49%              |
| 50<br>100                 |                                | 4             | 1.226         |                            |                       |                 |                 |                    |                   |                  |                              |

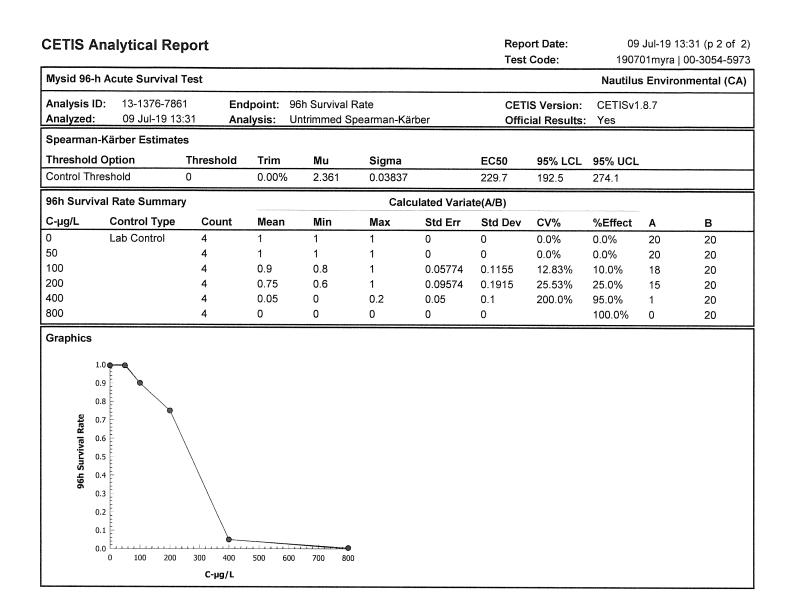
Analyst: Ja QA: EG 7/11/19





|  | •       | th Survival F<br>Intrimmed S<br>Mu<br>2.452 | pearman-Ká<br>Sigma<br>0.04231 |                     | Offic<br>EC50 | S Version:<br>ial Results:<br>95% LCL | CETISv1<br>Yes                           | ·                    | nmental (CA)           |
|--|---------|---|--------------------------------|---------------------|---------------|---------------------------------------|--|----------------------|------------------------|
| 13:31 Ana<br>ites<br>Threshold<br>0<br>ary<br>ary<br>Count | Trim    | ntrimmed Sj<br>Mu                           | pearman-Ká<br>Sigma<br>0.04231 |                     | Offic<br>EC50 | ial Results:                          | Yes                                      | .8.7                 |                        |
| Threshold<br>0<br>ary<br>e Count                           | 0.00%   |   | 0.04231                        |                     |               | 95% LCL                               | 95% UCL                                  |                      |                        |
| 0<br>ary<br>e Count  | 0.00%   |   | 0.04231                        |                     |               | 95% LCL                               | 95% UCL                                  |                      |                        |
| ary<br>e Count   |         | 2.452                                       |                                |                     | 282.8 232.8   |                                       |  |                      |                        |
| e Count  | Mean    |   |                                | 0.00% 2.452 0.04231 |               |                                       |  |                      |                        |
|  | Mean    |   | Cal                            | culated Varia       | ate(A/B)      |                                       |  |                      |                        |
| 4  |         | Min   | Max                            | Std Err             | Std Dev       | CV%                                   | %Effect                                  | А                    | в                      |
|  | 1       | 1   | 1                              | 0                   | 0             | 0.0%                                  | 0.0%                                     | 20                   | 20                     |
| 4  | 1       | 1   | 1                              | 0                   | 0             | 0.0%                                  | 0.0%                                     | 20                   | 20                     |
| 4  | 0.95    | 0.8   | 1                              | 0.05                | 0.1           | 10.53%                                | 5.0%                                     | 19                   | 20                     |
| 4  | 0.8     | 0.6   | 1                              | 0.1155              | 0.2309        | 28.87%                                | 20.0%                                    | 16                   | 20                     |
| 4  | 0.25    | 0   | 0.6                            | 0.1258              | 0.2517        | 100.7%                                | 75.0%                                    | 5                    | 20                     |
| 4  | 0       | 0   | 0                              | 0                   | 0             |                                       | 100.0%                                   | 0                    | 20                     |
| 0 300 400  | 500 600 | 700 800                                     | )                              |                     |               |                                       |  |                      |                        |
|  | 4       | 4 0   | 4 0 0                          | 4 0 0 0             | 4 0 0 0 0     | 4 0 0 0 0 0<br>0                      | 4 0 0 0 0 0 0<br>300 400 500 600 700 800 | 4 0 0 0 0 0 0 100.0% | 4 0 0 0 0 0 0 100.0% 0 |

Analyst: Jac QA: EG 7/11/19



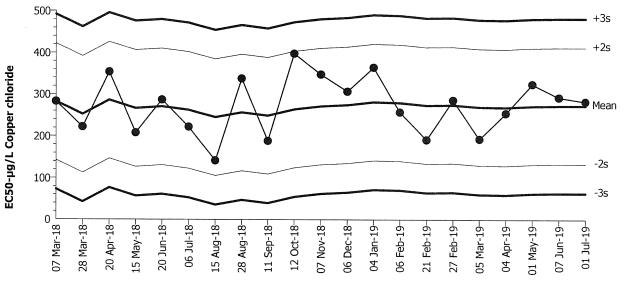
Analyst: JU QA: EG 7[11]19

| Report Date: | 09 Jul-19 13:32 ( 1 of 1) |
|--------------|---------------------------|
|--------------|---------------------------|

### **CETIS QC Plot**

| Mysid 96-h Acute Survival Test    |  |           | Nautilus Environmental (CA) |
|-----------------------------------|--|-----------|-----------------------------|
| Test Type: Survival (96h)         | Organism: Americamysis bahia (Opossum Shri | Material: | Copper chloride             |
| Protocol: EPA/821/R-02-012 (2002) | Endpoint: 48h Survival Rate                | Source:   | Reference Toxicant-REF      |





| Mean:  | 273.1 | Count: | 20     | -2s Warning Limit: | 133.4 | -3s Action Limit: | 63.53 |
|--------|-------|--------|--------|--------------------|-------|-------------------|-------|
| Sigma: | 69.86 | CV:    | 25.60% | +2s Warning Limit: | 412.8 | +3s Action Limit: | 482.7 |

#### **Quality Control Data**

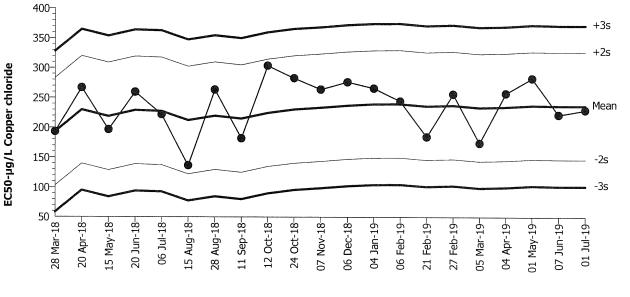
| Point | Year | Month | Day | Time  | QC Data | Delta  | Sigma   | Warning | Action | Test ID      | Analysis ID  |
|-------|------|-------|-----|-------|---------|--------|---------|---------|--------|--------------|--------------|
| 1     | 2018 | Mar   | 7   | 16:25 | 282.8   | 9.743  | 0.1395  |         |        | 10-8646-9178 | 05-6049-9266 |
| 2     |      |       | 28  | 16:10 | 221.9   | -51.19 | -0.7327 |         |        | 15-4374-6741 | 11-5664-4039 |
| 3     |      | Apr   | 20  | 15:45 | 353.6   | 80.48  | 1.152   |         |        | 10-4473-7155 | 03-6870-9073 |
| 4     |      | May   | 15  | 13:50 | 207.9   | -65.25 | -0.934  |         |        | 14-4944-1297 | 06-5339-6371 |
| 5     |      | Jun   | 20  | 15:30 | 287     | 13.86  | 0.1984  |         |        | 04-4231-0903 | 07-3012-3160 |
| 6     |      | Jul   | 6   | 14:55 | 221.9   | -51.19 | -0.7327 |         |        | 20-2728-1377 | 06-2839-1792 |
| 7     |      | Aug   | 15  | 14:00 | 141.4   | -131.7 | -1.885  |         |        | 14-8303-0655 | 09-9519-6980 |
| 8     |      |       | 28  | 16:10 | 337.9   | 64.76  | 0.9269  |         |        | 21-2933-4468 | 08-9274-2637 |
| 9     |      | Sep   | 11  | 16:35 | 188.5   | -84.61 | -1.211  |         |        | 16-0699-3926 | 11-2760-5538 |
| 10    |      | Oct   | 12  | 15:40 | 398     | 124.9  | 1.788   |         |        | 04-3284-8017 | 01-9110-2945 |
| 11    |      | Nov   | 7   | 15:15 | 348.2   | 75.12  | 1.075   |         |        | 05-2361-5235 | 05-6677-0931 |
| 12    |      | Dec   | 6   | 15:45 | 307.1   | 33.99  | 0.4865  |         |        | 02-8370-7066 | 03-1957-0006 |
| 13    | 2019 | Jan   | 4   | 16:20 | 365.1   | 92.03  | 1.317   |         |        | 15-2358-5025 | 00-6334-9175 |
| 14    |      | Feb   | 6   | 15:15 | 257.5   | -15.63 | -0.2237 |         |        | 02-9902-9095 | 09-9328-1865 |
| 15    |      |       | 21  | 15:50 | 191.3   | -81.79 | -1.171  |         |        | 08-2049-6233 | 08-1016-4407 |
| 16    |      |       | 27  | 15:45 | 286.4   | 13.27  | 0.1899  |         |        | 18-0439-0628 | 11-4083-2551 |
| 17    |      | Mar   | 5   | 16:25 | 193.2   | -79.91 | -1.144  |         |        | 07-2443-9002 | 20-8635-9036 |
| 18    |      | Apr   | 4   | 15:45 | 254.9   | -18.19 | -0.2603 |         |        | 12-5149-9007 | 10-6064-9109 |
| 19    |      | May   | 1   | 14:45 | 324.9   | 51.8   | 0.7415  |         |        | 03-8402-7514 | 02-0135-9111 |
| 20    |      | Jun   | 7   | 17:40 | 292.8   | 19.72  | 0.2822  |         |        | 15-0477-0993 | 04-0710-1520 |
| 21    |      | Jul   | 1   | 15:20 | 282.8   | 9.743  | 0.1395  |         |        | 00-3054-5973 | 12-7174-3681 |

Analyst: JU QA: E47/11/19

#### **CETIS QC Plot**

| Mysid 96-h Acute Survival Test    |  |           | Nautilus Environmental (CA) |
|-----------------------------------|--|-----------|-----------------------------|
| Test Type: Survival (96h)         | Organism: Americamysis bahia (Opossum Shri | Material: | Copper chloride             |
| Protocol: EPA/821/R-02-012 (2002) | Endpoint: 96h Survival Rate                | Source:   | Reference Toxicant-REF      |





| Mean:  | 236.7 | Count: | 20     | -2s Warning Limit: | 146.7 | -3s Action Limit: | 101.7 |
|--------|-------|--------|--------|--------------------|-------|-------------------|-------|
| Sigma: | 45    | CV:    | 19.00% | +2s Warning Limit: | 326.7 | +3s Action Limit: | 371.7 |

**Quality Control Data** 

| Point | Year | Month | Day | Time  | QC Data | Delta  | Sigma   | Warning | Action | Test ID      | Analysis ID  |
|-------|------|-------|-----|-------|---------|--------|---------|---------|--------|--------------|--------------|
| 1     | 2018 | Mar   | 28  | 16:10 | 193.2   | -43.51 | -0.9669 |         |        | 15-4374-6741 | 15-6199-7890 |
| 2     |      | Apr   | 20  | 15:45 | 266.7   | 30.01  | 0.6668  |         |        | 10-4473-7155 | 05-7699-1337 |
| 3     |      | May   | 15  | 13:50 | 196.6   | -40.14 | -0.8919 | -       |        | 14-4944-1297 | 02-2365-6992 |
| 4     |      | Jun   | 20  | 15:30 | 259.4   | 22.67  | 0.5037  |         |        | 04-4231-0903 | 16-8168-7125 |
| 5     |      | Jul   | 6   | 14:55 | 221.9   | -14.79 | -0.3286 |         |        | 20-2728-1377 | 02-5699-0099 |
| 6     |      | Aug   | 15  | 14:00 | 136.6   | -100.1 | -2.224  | (-)     |        | 14-8303-0655 | 01-5941-7563 |
| 7     |      |       | 28  | 16:10 | 263.4   | 26.73  | 0.5941  |         |        | 21-2933-4468 | 03-8009-1017 |
| 8     |      | Sep   | 11  | 16:35 | 182.1   | -54.62 | -1.214  |         |        | 16-0699-3926 | 16-7253-9506 |
| 9     |      | Oct   | 12  | 15:40 | 303.7   | 66.98  | 1.489   |         |        | 04-3284-8017 | 12-8637-0903 |
| 10    |      |       | 24  | 15:15 | 282.8   | 46.14  | 1.025   |         |        | 13-1692-3940 | 19-7279-9581 |
| 11    |      | Nov   | 7   | 15:15 | 263.9   | 27.2   | 0.6045  |         |        | 05-2361-5235 | 10-0369-9874 |
| 12    |      | Dec   | 6   | 15:45 | 276.3   | 39.57  | 0.8794  |         |        | 02-8370-7066 | 14-9907-2370 |
| 13    | 2019 | Jan   | 4   | 16:20 | 265.9   | 29.17  | 0.6482  |         |        | 15-2358-5025 | 06-4259-8181 |
| 14    |      | Feb   | 6   | 15:15 | 244.4   | 7.739  | 0.172   |         |        | 02-9902-9095 | 01-2344-0730 |
| 15    |      |       | 21  | 15:50 | 184.6   | -52.07 | -1.157  |         |        | 08-2049-6233 | 21-2714-8308 |
| 16    |      |       | 27  | 15:45 | 256.2   | 19.48  | 0.4328  |         |        | 18-0439-0628 | 14-6353-1021 |
| 17    |      | Mar   | 5   | 16:25 | 174.1   | -62.59 | -1.391  |         |        | 07-2443-9002 | 17-5549-2926 |
| 18    |      | Apr   | 4   | 15:45 | 257.5   | 20.77  | 0.4616  |         |        | 12-5149-9007 | 02-2336-7586 |
| 19    |      | May   | 1   | 14:45 | 282.8   | 46.14  | 1.025   |         |        | 03-8402-7514 | 10-4449-6498 |
| 20    |      | Jun   | 7   | 17:40 | 221.9   | -14.79 | -0.3286 |         |        | 15-0477-0993 | 15-5135-1118 |
| 21    |      | Jul   | 1   | 15:20 | 229.7   | -6.96  | -0.1547 |         |        | 00-3054-5973 | 13-1376-7861 |
|       |      |       |     |       |         |        |         |         |        |              |              |

#### Water Quality Measurements & Test Organism Survival

#### Marine Acute Bioassay **Static-Renewal Conditions**

| Client:       | t: Internal Test Species: A. bahia |        |     |                 |       |             |      |      |                     |        |         | Tech Initials |                  |                |      |       |      |        |                 |        |                 |      |               |                        |     |     |
|---------------|------------------------------------|--------|-----|-----------------|-------|-------------|------|------|---------------------|--------|---------|---------------|------------------|----------------|------|-------|------|--------|-----------------|--------|-----------------|------|---------------|------------------------|-----|-----|
| Sample ID:    | CuCl                               | 2      |     |                 |       |             |      |      |                     | Star   | t Date/ | Time          | 7/1/2            | 2019           | 1    | 520   | )    |        |                 |        |                 | 0    | 24            | 48                     | 72  | 96  |
| Test No.:     | 1907                               | 01m    | yra |                 |       |             |      |      | Re                  | newa   | Date/   | Time          | 7/3/2            | 2019           |      | 350   |      |        |                 | С      | ounts:          | m    | TR            | TN                     | BO  | RI  |
|               |                                    |        |     |                 |       |             |      |      |                     | End    | Date/   | Time          | 7/5/2            | 2019           |      | 35    |      |        |                 | Rea    | dings:          | pm   | RT            |                        | BO. | R   |
|               |                                    |        |     |                 |       |             |      |      |                     |        |         |               |                  |                |      |       |      | l      | Dilutio         | ns ma  | de by:          | n    |               | BO                     |     |     |
|               |                                    |        |     |                 |       |             |      |      |                     |        |         |               |                  |                |      |       |      | High   | conc. I         | made ( | μ <b>g/L)</b> : | 800  |               | 800                    |     |     |
|               |                                    |        |     |                 |       |             |      |      |                     |        |         |               |                  |                |      |       | v    | ol. Cu | stock           | added  | (mL):           | 17.2 | -             | 17.2                   |     |     |
|               |                                    |        |     |                 |       |             |      |      | Cu st               | ock co | ncentr  | ation         | (μ <b>g/L)</b> : | 93             | ΰÛ   | 0     |      |        |                 |        |                 | 2000 | 1.102.049.049 | 2000                   |     | -   |
| Concentration | Rand<br>#                          |        |     | ber of<br>ganis |       | •           |      | \$   | Salinit<br>(ppt)    | -      |         |               | Ten              | nperat<br>(°C) | ture |       |      | Dissol | ved O<br>(mg/L) |        | י               |      | I             | pH<br>(units)          | )   |     |
|               |                                    | 0      | 24  | 48              | 72    | 96          | 0    | 24   | 48                  | 72     | 96      | 0             | 24               | 48             | 72   | 96    | 0    | 24     | 48              | 72     | 96              | 0    | 24            | 48                     | 72  | 96  |
| Lab Control   | 8                                  | 5      | 5   | 5               | 5     | 5           | 29.4 | 29.9 | 1<br>29.2           | 29.7   | 24.9    | 24.2          | 242              | 243            | 251  | 25.7  | 7.0. | 4.0    | 69              | 5.8    | 5.4             | 297  | 3.1           | <b>48</b><br>i<br>7,84 | 776 | 7.7 |
|               |                                    |        |     |                 |       | -           | 1    |      |                     |        |         |               | 75 A             | 1.00           |      |       |      | 5.5    | f               |        |                 |      | 0 12          | e 1                    |     |     |
|               | 7                                  | 5      | 5   | 5               | 5     | 5           |      | 6    | ISA.                |        |         |               | 25.0             | US.L           | -    | 43.53 |      |        | 6.0             |        |                 |      | 7.51          | FR                     |     |     |
|               | 7<br>15                            | 5<br>5 | 55  | 55              | 55    | 5<br>5      |      |      | <u>159.</u><br>29.8 |        |         |               |                  | US.L           |      |       |      |        | 6.0             |        |                 |      | 7.81          | the                    | -   |     |
|               |                                    |        | 555 | 5 5 5           | 5 5 5 | 5<br>5<br>5 |      |      |                     |        |         |               |                  | 25:1           | -    |       |      |        | 6.0             |        |                 |      | 7.51          | 77                     | -   |     |

|  | 7              | 5        | 5   | 5  | 5   | 5            |                      | 0                                   | 25.2<br>29.8 |      |       |          | \$P.0                                  | 2S.U      | F    |        |     | p.J  | 6.0      |     |     |      | 7.81      | FA        | -                  |       |
|--|----------------|----------|-----|----|-----|--------------|----------------------|-------------------------------------|--------------|------|-------|----------|--|-----------|------|--------|-----|------|----------|-----|-----|------|-----------|-----------|--------------------|-------|
|  | 15             | 5        | 5   | 5  | 5   | 5            |                      |                                     | 29.8         |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
|  | 4              | 5        | 5   | 5  | 5   | 5            |                      |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
| 50   | 11             | 5        | 5   | 5  | 5   | 5            | 29.5                 | 29.5                                | 1<br>30,0    | 30.0 | 30.3  | 24.2     | 255                                    | i<br>24,2 | 25.2 | 25.7   | 6.9 | 5.4  | 7.3      | 5.8 | 6)  | 7.98 | 7.90      | 7.89      | 7.78               | 7.7   |
|  | 12             | 5        | 5   | 5  | 5   | 5            |                      | 1.22232.01                          | 29.9         |      |       |          |  | 124.9     |      |        |     |      | 6.0      |     |     |      |           | 7.77      |                    |       |
|  | 2              | 5        | 5   | 5  | 5   | 5            |                      |                                     |              |      |       |          | Sure of                                |           |      |        |     |      |          |     |     |      |           |           |                    |       |
|  | 21             | 5        | 5   | 5  | 5   | 5            |                      |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
| 100  | 10             | 5        | 5   | 5  | 5   | 4            | 29.S                 | 29.5                                | 29.9         | 20,N | 308   | 242      | 25.6                                   | i<br>24.Z | 253  | 26.S   | 6.8 | 57   | 7.3      | 5.6 | 52  | 7.99 | 7.90      | 1<br>7.90 | 7.78               | 37.76 |
|  | 13             | 5        | 5   | 5  | 5   | .S           |                      |                                     | r<br>29.9    |      |       |          |  | 24.9      |      |        |     |      | f<br>6.0 |     |     |      | 03:522:23 | 7.81      |                    |       |
|  | 1              | 5        | 5   | 5  | 5   | 5            | 2003<br>1996<br>1995 |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
| ÷  | 23             | 5        | 5   | 4  | 4   | 4            |                      |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
| 200  | 20             | 5        | 5   | 5  | 5   | 5            | 29.5                 | 29.5                                | ;<br>29.9    | 30.1 | 303   | 29.1     | 25,6                                   | 1<br>24.3 | 25.5 | 255    | 6,8 | 5.3  | 7.4      | 5.4 | 5.2 | 798  | 7.87      | i<br>7.9( | 7.75               | 7.70  |
|  | 14             | 5        | 5   | 5  | 5   | 4            |                      | alesta<br>al susceità<br>a susceità | 29.9         |      |       |          | Costantino<br>Costantino<br>Costantino | łs.2      |      |        |     | 1899 | f<br>6.0 |     |     |      |           | 7.82      |                    |       |
|  | 6              | 5        | 4   | 3  | 3   | ż            |                      |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
|  | 22             | 5        | 5   | 3  | 3   | 3            |                      |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
| 400  | 3              | 5        | 4   | Ī  | t   | 0            | 29.3                 | 29.4                                | '30.0        | 30,2 | 30,5  | 24.0     | 25.6                                   | 24.4      | 25.4 | 255    | 6,8 | 5.7  | 7.3      | 5.8 | 5.5 | 797  | 7.88      | 7,90      | 785                | 7,85  |
|  | 19             | 5        | 4   | 3  | 2   | 1            |                      | 1.126.2003                          | f<br>29.9    |      |       |          |  | 25.1      |      |        |     |      | fig      |     |     |      |           | f<br>7.80 |                    |       |
|  | 16             | 5        | 3   | 0  | -   | -0000        |                      |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
|  | 9              | 5        | 5   | 1  | ۱   | 0            |                      |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           | стара.<br>Ката (8) |       |
| 800  | 5              | 5        | 3   | θ  |     | /            | 29.2                 | 29.2                                | -<br>29.8    | -    | 1     | 24.2     | 25.6                                   | 247       |      | 1      | 6.3 | 5.9  | 7.3      | 1   | 1   | 795  | 7.90      | 7.88      | ~                  | ~     |
|  | 24             | 5        | 0   |    | ALC | $\mathbb{V}$ |                      |                                     | 29.4         |      |       |          |  | f<br>25.5 |      |        |     |      | 5.9      |     |     |      |           | 7.87      |                    |       |
|  | 18             | 5        | 4   | 0  | 6   | 4P           | 1993)<br>1997 - Sar  |                                     |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
|  | 17             | 5        | 4   | 0  | 10. |              |                      | 0.900                               |              |      |       |          |  |           |      |        |     |      |          |     |     |      |           |           |                    |       |
| Rand # QC:<br>Initial Counts QC'd by:<br>Initiated by: | DM<br>DM<br>DM | \<br>∂b⊅ | AC. | 5  | X   |              |                      |                                     |              |      |       | Roomania |  |           |      |        |     |      |          |     |     | L    |           |           | <u></u>            |       |
| Animal Source/Date                                     | Recei          | ved:     |     | AB | 5/  | <i>61</i>    | 291                  | 19                                  | -            |      | Age a | at Initi | ation:                                 | 5         | de   | 195    |     |      |          |     |     |      | Feed      | ding Ti   | mes                |       |
| Animal Acclimation                                     | Qualif         | iers (   |     |    |     |              |                      |                                     |              |      | 22 /  |          |  |           | / no | $\leq$ |     |      |          |     |     | 0    | 24        | 48        | 72                 | 96    |
|  |                |          |     |    |     |              |                      |                                     |              |      |       |          |  |           | C    |        |     |      |          |     | AM: | 1    | 0000      | 085 Û     | iudo               | 5900  |

i = initial reading in fresh test solution, f = final reading in test chamber prior to renewal

Organisms fed prior to initiation, circle one (y)/ n)

QC Check:

BQ18 KTY/2/19 3918 RT 7/4/19

| Final Review: | Faz | (        | 17                                    |
|---------------|-----|----------|---------------------------------------|
|               |     | <u> </u> | · · · · · · · · · · · · · · · · · · · |

PM: 1705 1600 1600 1700

| Nautilus Environmental. 4340 V | andever Avenue. | San Diego. | CA 92120. |
|--------------------------------|-----------------|------------|-----------|
|--------------------------------|-----------------|------------|-----------|

F

(Dats TN7/3/19)

l

**Chronic Urchin Development** 

# **CETIS Summary Report**

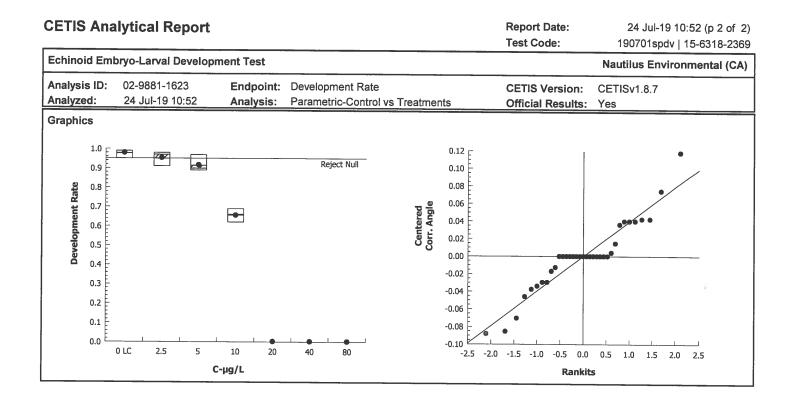
Report Date: Test Code: 24 Jul-19 10:52 (p 1 of 1) 190701spdv | 15-6318-2369

|  |   | -  |   |  |  |  |        |          |                               |               |                                       |
|--|---|--|---|--|--|--|--------|----------|-------------------------------|---------------|---------------------------------------|
| Echinoid Em  | bryo-Larval Dev   | elopmen  | t Test  |  |  |  |        |          | Nauti                         | lus Environ   | mental (CA                            |
| Batch ID:<br>Start Date:<br>Ending Date:<br>Duration:                  | 13-9115-8417<br>01 Jul-19 <b>101</b><br>04 Jul-19 <b>1</b> 0<br>72h | 5 F<br>35 S  | est Type:<br>Protocol:<br>pecies:<br>Source:          | s: Strongylocentrotus purpuratus<br>: Pt. Loma                 |  |  |        |          | Natural Seaw<br>Not Applicabl |               |                                       |
| Sample ID:   | 14-8889-5540  | C  | ode:  | 190701spdv   |  |  |        | Client:  | Internal                      |               |                                       |
| Sample Date:   |   | N  | laterial:   | Copper chloride  | e  |  |        | Project: |                               |               |                                       |
| Receive Date   |   | -  | iource:   | Reference Toxi   |  |  |        |          |                               |               |                                       |
| Sample Age:  | NA  | S  | station:  | Copper Chlorid   | e  |  |        |          |                               |               | 0                                     |
| Comparison   | Summary   |  |   |  |  |  |        |          |                               |               |                                       |
| Analysis ID  | Endpoint  |  | NOEL  | LOEL   | TOEL   | PMSD   | TU     | Metho    | bd                            |               |                                       |
| 02-9881-1623   | Development F   | Rate   | 2.5   | 5  | 3.536  | 2.78%  |        | Dunne    | ett Multiple Co               | mparison Te   | st                                    |
| Point Estimat  | te Summary  |  |   |  |  |  |        |          |                               |               | · · · · · · · · · · · · · · · · · · · |
| Analysis ID  | Endpoint  |  | Level   | µg/L   | 95% LCL  | 95% UCL  | τU     | Metho    | bd                            |               |                                       |
| 20-3014-2815   | Development F   | Rate   | EC50  | 10.92  | 10.55  | 11.32  | -      | Trimm    | ed Spearmar                   | -Kärber       |                                       |
| Test Accepta   | bility  |  |   |  |  |  |        |          |                               |               |                                       |
| Analysis ID  | Endpoint  |  | Attrib  | ute  | Test Stat  | TAC Limi   | ts     | Overla   | ap Decisio                    | n             |                                       |
| 02-9881-1623   | Development F   | Rate   | Contro  | l Resp   | 0.978  | 0.8 - NL   |        | Yes      |                               | Acceptability | / Criteria                            |
| 20-3014-2815   | Development F   | Rate   | Contro  | Resp   | 0.978  | 0.8 - NL   |        | Yes      |                               | Acceptability |                                       |
| 02-9881-1623   | Development F   | Rate   | PMSD  |  | 0.02777  | NL - 0.25  |        | No       |                               | Acceptability |                                       |
| Development  | Rate Summary  |  |   |  |  |  |        |          |                               |               |                                       |
| C-µg/L   | Control Type  | Count  | Mean  | 95% LCL  | 95% UCL  | Min  | Мах    | Std E    | r Std Dev                     | CV%           | %Effect                               |
| 0  | Lab Control   | 5  | 0.978   | 0.9558   | 1  | 0.95   | 0.99   | 0.008    | 0.01789                       | 1.83%         | 0.0%                                  |
| 2.5  |   | 5  | 0.95  | 0.9098   | 0.9902   | 0.91   | 0.98   | 0.0144   | 0.0324                        | 3.41%         | 2.86%                                 |
| 5  |   | 5  | 0.914   | 0.8742   | 0.9538   | 0.89   | 0.97   | 0.0143   | 0.03209                       | 3.51%         | 6.54%                                 |
| 10   |   | 5  | 0.656   | 0.6225   | 0.6895   | 0.62   | 0.69   | 0.0120   | 0.02702                       | 4.12%         | 32.92%                                |
|  |   |  |   |  |  |  |        |          |                               |               |                                       |
|  |   | 5  | 0   | 0  | 0  | 0  | 0      | 0        | 0                             |               | 100.0%                                |
| 20<br>40   |   | 5  | 0   | 0  | 0<br>0   | 0<br>0   |        | 0<br>0   | 0<br>0                        |               | 100.0%<br>100.0%                      |
| 40   |   |  |   |  | -  |  | 0      | -        |                               |               |                                       |
| 40<br>80   | Rate Detail   | 5  | 0   | 0  | 0  | 0  | 0<br>0 | 0        | 0                             |               | 100.0%                                |
| 40<br>80<br>Development<br>C-µg/L                                      | Control Type  | 5<br>5<br><b>Rep 1</b>                                 | 0<br>0<br><b>Rep 2</b>                                | 0<br>0<br><b>Rep 3</b>   | 0<br>0<br><b>Rep 4</b>                                       | 0<br>0<br><b>Rep 5</b>                                 | 0<br>0 | 0        | 0                             |               | 100.0%                                |
| 40<br>80<br>Development<br>C-μg/L<br>0                                 |   | 5<br>5<br><b>Rep 1</b><br>0.99                         | 0   | 0<br>0   | 0  | 0  | 0<br>0 | 0        | 0                             |               | 100.0%                                |
| 40<br>80<br><b>Development</b><br>C-µg/L<br>0<br>2.5                   | Control Type  | 5<br>5<br><b>Rep 1</b><br>0.99<br>0.92                 | 0<br>0<br><b>Rep 2</b><br>0.95<br>0.98                | 0<br>0<br><b>Rep 3</b>   | 0<br>0<br><b>Rep 4</b>                                       | 0<br>0<br><b>Rep 5</b>                                 | 0<br>0 | 0        | 0                             |               | 100.0%                                |
| 40<br>80<br><b>Development</b><br><b>C-μg/L</b><br>0<br>2.5<br>5       | Control Type  | 5<br>5<br><b>Rep 1</b><br>0.99                         | 0<br>0<br><b>Rep 2</b><br>0.95                        | 0<br>0<br><b>Rep 3</b><br>0.99                                 | 0<br>0<br><b>Rep 4</b><br>0.99                               | 0<br>0<br><b>Rep 5</b><br>0.97                         | 0<br>0 | 0        | 0                             |               | 100.0%                                |
| 40<br>80<br><b>Development</b><br><b>C-μg/L</b><br>0<br>2.5<br>5       | Control Type  | 5<br>5<br><b>Rep 1</b><br>0.99<br>0.92                 | 0<br>0<br><b>Rep 2</b><br>0.95<br>0.98                | 0<br>0<br><b>Rep 3</b><br>0.99<br>0.97                         | 0<br>0<br><b>Rep 4</b><br>0.99<br>0.91                       | 0<br>0<br><b>Rep 5</b><br>0.97<br>0.97                 | 0<br>0 | 0        | 0                             |               | 100.0%                                |
|  | Control Type  | 5<br>5<br><b>Rep 1</b><br>0.99<br>0.92<br>0.91         | 0<br>0<br><b>Rep 2</b><br>0.95<br>0.98<br>0.9         | 0<br>0<br><b>Rep 3</b><br>0.99<br>0.97<br>0.97                 | 0<br>0<br><b>Rep 4</b><br>0.99<br>0.91<br>0.9                | 0<br>0<br><b>Rep 5</b><br>0.97<br>0.97<br>0.89         | 0<br>0 | 0        | 0                             |               | 100.0%                                |
| 40<br>80<br><b>Development</b><br><b>C-μg/L</b><br>0<br>2.5<br>5<br>10 | Control Type  | 5<br>5<br><b>Rep 1</b><br>0.99<br>0.92<br>0.91<br>0.66 | 0<br>0<br><b>Rep 2</b><br>0.95<br>0.98<br>0.9<br>0.62 | 0<br>0<br><b>Rep 3</b><br>0.99<br>0.97<br>0.97<br>0.97<br>0.67 | 0<br>0<br><b>Rep 4</b><br>0.99<br>0.91<br>0.9<br>0.9<br>0.69 | 0<br>0<br><b>Rep 5</b><br>0.97<br>0.97<br>0.89<br>0.64 | 0<br>0 | 0        | 0                             |               | 100.0%                                |

Analyst: JU QA: HEP-124/19

| CETIS An                                | alytical Rep                      | ort                              |   |                                   |                                   |                                   |                                   | ort Date:<br>Code:                |  |                                  | 52 (p 1 of 2)<br>5-6318-2369     |
|---|-----------------------------------|----------------------------------|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|--|----------------------------------|----------------------------------|
| Echinoid En                             | nbryo-Larval Dev                  | elopment                         | Test                                      |                                   |                                   |                                   |                                   |                                   |  |                                  | mental (CA)                      |
| Analysis ID:<br>Analyzed:               | 02-9881-1623<br>24 Jul-19 10:5    |                                  | -   | velopment F<br>rametric-Cor       |                                   | tments                            |                                   | IS Version                        |  | .8.7                             |                                  |
| Data Transfe                            | orm                               | Zeta                             | Alt Hyp                                   | Trials                            | Seed                              |                                   | PMSD                              | NOEL                              | LOEL                                     | TOEL                             | TU                               |
| Angular (Cor                            | rected)                           | NA                               | C > T                                     | NA                                | NA                                |                                   | 2.78%                             | 2.5                               | 5  | 3.536                            |                                  |
| Dunnett Mul                             | Itiple Compariso                  | n Test                           |   |                                   |                                   |                                   |                                   |                                   |  |                                  |                                  |
| Control                                 | vs C-µg/L                         |                                  | Test Stat                                 | Critical                          | MSD DF                            | P-Value                           | P-Type                            | Decision                          | (a:5%)                                   |                                  |                                  |
| Lab Control                             | 2.5                               |                                  | 2.033                                     | 2.227                             | 0.084 8                           | 0.0709                            | CDF                               |                                   | ificant Effect                           |                                  |                                  |
|   | 5*                                |                                  | 4.053                                     | 2.227                             | 0.084 8                           | 0.0013                            | CDF                               | Significar                        |  |                                  |                                  |
|   | 10*                               |                                  | 12.97                                     | 2.227                             | 0.084 8                           | <0.0001                           | CDF                               | Significar                        |  |                                  |                                  |
| ANOVA Tabl                              | le                                |                                  |   |                                   |                                   |                                   |                                   |                                   |  |                                  |                                  |
| Source                                  | Sum Squ                           | ares                             | Mean Sq                                   | Jare                              | DF                                | F Stat                            | P-Value                           | Decision                          | (α:5%)                                   |                                  |                                  |
| Between                                 | 0.689426                          | 5                                | 0.229808                                  | 3                                 | 3                                 | 65.3                              | <0.0001                           | Significan                        |  |                                  |                                  |
| Error                                   | 0.056304                          | 73                               | 0.003519                                  | 045                               | 16                                |                                   |                                   | •                                 |  |                                  |                                  |
| Total                                   | 0.745731                          | 3                                |   |                                   | 19                                |                                   |                                   |                                   |  |                                  |                                  |
| Distribution                            | al Tests                          |                                  |   |                                   |                                   |                                   |                                   |                                   |  |                                  |                                  |
| Attribute                               | Test                              |                                  |   | Test Stat                         | Critical                          | P-Value                           | Decision                          | α:1%)                             |  |                                  |                                  |
| Variances                               | Bartlett E                        | Equality of                      | Variance                                  | 3.07                              | 11.34                             | 0.3809                            | Equal Var                         |                                   |  |                                  |                                  |
| Distribution                            | Shapiro-                          | Wilk W No                        | ormality                                  | 0.9607                            | 0.866                             | 0.5583                            | Normal Di                         |                                   |  |                                  |                                  |
| Developmen                              | nt Rate Summary                   |                                  |   |                                   |                                   |                                   |                                   |                                   |  |                                  |                                  |
| C-µg/L                                  | Control Type                      | Count                            | Mean                                      | 95% LCL                           | 95% UCL                           | Median                            | Min                               | Max                               | Std Err                                  | CV%                              | %Effect                          |
| 0                                       | Lab Control                       | 5                                | 0.978                                     | 0.9558                            | 1                                 | 0.99                              | 0.95                              | 0.99                              | 0.008                                    | 1.83%                            | 0.0%                             |
| 2.5                                     |                                   | 5                                | 0.95                                      | 0.9098                            | 0.9902                            | 0.97                              | 0.91                              | 0.98                              | 0.01449                                  | 3.41%                            | 2.86%                            |
| 5                                       |                                   | 5                                | 0.914                                     | 0.8742                            | 0.9538                            | 0.9                               | 0.89                              | 0.97                              | 0.01435                                  | 3.51%                            | 6.54%                            |
| 10                                      |                                   | 5                                | 0.656                                     | 0.6225                            | 0.6895                            | 0.66                              | 0.62                              | 0.69                              | 0.01208                                  | 4.12%                            | 32.92%                           |
| 20                                      |                                   | 5                                | 0   | 0                                 | 0                                 | 0                                 | 0                                 | 0                                 | 0  |                                  | 100.0%                           |
| 40                                      |                                   | 5                                | 0   | 0                                 | 0                                 | 0                                 | 0                                 | 0                                 | 0  |                                  | 100.0%                           |
| 80                                      |                                   | 5                                | 0   | 0                                 | 0                                 | 0                                 | 0                                 | 0                                 | 0  |                                  | 100.0%                           |
| Angular (Corrected) Transformed Summary |                                   |                                  |   |                                   |                                   |                                   |                                   |                                   |  |                                  |                                  |
| Angular (Coi                            | rrected) Transfor                 | mea Sum                          | mary                                      |                                   |                                   |                                   |                                   |                                   |  |                                  |                                  |
| Angular (Coi<br>C-µg/L                  | rrected) Transfor<br>Control Type | Count                            | Mean                                      | 95% LCL                           | 95% UCL                           | Median                            | Min                               | Max                               | Std Err                                  | CV%                              | %Effect                          |
| <b>С-µg/L</b><br>0                      |                                   |                                  | -   | <b>95% LCL</b><br>1.359           | 95% UCL                           |                                   |                                   |                                   |  |                                  |                                  |
| <b>С-µg/L</b><br>0<br>2.5               | Control Type                      | Count                            | Mean                                      |                                   |                                   | Median<br>1.471<br>1.397          | 1.345                             | 1.471                             | 0.02572                                  | 4.02%                            | 0.0%                             |
| <b>С-µg/L</b><br>0<br>2.5<br>5          | Control Type                      | Count<br>5                       | <b>Mean</b>                               | 1.359                             | 1.502                             | 1.471                             | 1.345<br>1.266                    | 1.471<br>1.429                    | 0.02572<br>0.03307                       | 4.02%<br>5.46%                   | 0.0%<br>5.33%                    |
| <b>С-µg/L</b><br>0<br>2.5<br>5<br>10    | Control Type                      | Count<br>5<br>5                  | Mean<br>1.431<br>1.354                    | 1.359<br>1.263                    | 1.502<br>1.446                    | 1.471<br>1.397<br>1.249           | 1.345<br>1.266<br>1.233           | 1.471<br>1.429<br>1.397           | 0.02572<br>0.03307<br>0.02996            | 4.02%<br>5.46%<br>5.24%          | 0.0%<br>5.33%<br>10.63%          |
| <b>С-µg/L</b><br>0<br>2.5<br>5<br>10    | Control Type                      | Count<br>5<br>5<br>5             | Mean<br>1.431<br>1.354<br>1.279           | 1.359<br>1.263<br>1.196           | 1.502<br>1.446<br>1.362           | 1.471<br>1.397<br>1.249<br>0.9483 | 1.345<br>1.266<br>1.233<br>0.9066 | 1.471<br>1.429<br>1.397<br>0.9803 | 0.02572<br>0.03307<br>0.02996<br>0.01272 | 4.02%<br>5.46%<br>5.24%<br>3.01% | 0.0%<br>5.33%<br>10.63%<br>34.0% |
| <b>С-µg/L</b><br>0<br>2.5               | Control Type                      | <b>Count</b><br>5<br>5<br>5<br>5 | Mean<br>1.431<br>1.354<br>1.279<br>0.9443 | 1.359<br>1.263<br>1.196<br>0.9089 | 1.502<br>1.446<br>1.362<br>0.9796 | 1.471<br>1.397<br>1.249           | 1.345<br>1.266<br>1.233           | 1.471<br>1.429<br>1.397           | 0.02572<br>0.03307<br>0.02996            | 4.02%<br>5.46%<br>5.24%          | 0.0%<br>5.33%<br>10.63%          |

Analyst: JCL QA: KTP7/24/19



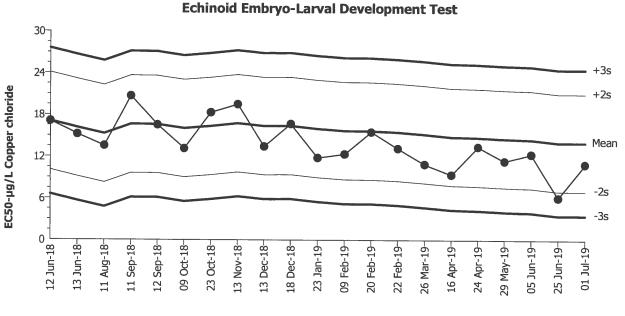
Analyst: Ja QA: 05707/24/19

|                      | Analytical Re   |                 |       |                               |         |               | •                  | ort Date:<br>Code:         |                          |            | ):52 (p 1 of<br>15-6318-236 |
|----------------------|---|-----------------|-------|-------------------------------|---------|---------------|--------------------|----------------------------|--------------------------|------------|-----------------------------|
| Echinoid             | Embryo-Larval D   | evelopment 1    | est   |                               |         |               |                    |                            | Nautilu                  | s Enviror  | nmental (CA                 |
| Analysis<br>Analyzed |   |                 | -     | Development I<br>Frimmed Spea |         | ber           |                    | IS Version:<br>al Results: | CETISv1<br>Yes           | .8.7       |                             |
| Trimmed              | Spearman-Kärbe  | r Estimates     |       |                               |         |               |                    |                            |                          |            |                             |
| Threshol             |   | Threshold       | Trim  | Mu                            | Sigma   |               | EC50               | 95% LCL                    | 95% UCL                  |            |                             |
| Control Th           |   | 0.022           | 2.86% | 1.038                         | 0.00767 | '1            | 10.92              | 10.55                      | 11.32                    |            |                             |
| Developn             | nent Rate Summa   | irv             |       |                               | Cal     | culated Varia |                    |                            |                          |            |                             |
| C-µg/L               | Control Type  | Count           | Mean  | Min                           | Max     | Std Err       |                    | C)/0/                      | 0/ 5554                  |            | -                           |
| 0                    | Lab Control   | 5               | 0.978 | 0.95                          | 0.99    | 0.008         | Std Dev<br>0.01789 |                            | %Effect<br>0.0%          | A<br>489   | B                           |
| 2.5                  |   | 5               | 0.95  | 0.91                          | 0.98    | 0.01449       | 0.0324             | 3.41%                      | 2.86%                    | 469<br>475 | 500<br>500                  |
| 5                    |   | 5               | 0.914 | 0.89                          | 0.97    | 0.01435       | 0.03209            | 3.51%                      | 2.80 <i>%</i><br>6.54%   | 475<br>457 | 500<br>500                  |
| 10                   |   | 5               | 0.656 | 0.62                          | 0.69    | 0.01208       | 0.02702            | 4.12%                      | 32.92%                   | 457<br>328 |                             |
| 20                   |   | 5               | 0     | 0                             | 0.00    | 0             | 0.02702            | 4.1270                     | 32.92 <i>%</i><br>100.0% | 320<br>0   | 500<br>500                  |
| 40                   |   | 5               | 0     | 0                             | 0       | 0             | 0                  |                            | 100.0%                   | 0          | 500<br>500                  |
| 80                   |   | 5               | 0     | 0                             | 0       | 0             | 0                  |                            | 100.0%                   | 0          | 500<br>500                  |
| Development Rate     | 1.0         0.9         0.8         0.7         0.6         0.5         0.4         0.3         0.2         0.1 |                 |       |                               |         |               |                    |                            |                          |            |                             |
|                      | 0.0 E   | 30 40<br>С-µg/L | 50 60 | 70 80                         |         |               |                    |                            |                          |            |                             |

Analyst: JU QA: PEP7/24/19

#### **CETIS QC Plot**

| Echinoid Embryo-Larval Development Tes                      | st |  | Nautilus Environmental (CA) |
|---|----|--|-----------------------------|
| Test Type: Development<br>Protocol: EPA/600/R-95/136 (1995) |    | Strongylocentrotus purpuratus (Purpl<br>Development Rate |                             |



| Mean:  | 14.02 | Count: | 20     | -2s Warning Limit: | 7.024 | -3s Action Limit: | 3.525 |
|--------|-------|--------|--------|--------------------|-------|-------------------|-------|
| Sigma: | 3.499 | CV:    | 25.00% | +2s Warning Limit: | 21.02 | +3s Action Limit: | 24.52 |

**Quality Control Data** 

| Point | Year | Month | Day | Time  | QC Data | Delta   | Sigma   | Warning | Action | Test ID      | Analysis ID  |
|-------|------|-------|-----|-------|---------|---------|---------|---------|--------|--------------|--------------|
| 1     | 2018 | Jun   | 12  | 11:45 | 17.1    | 3.076   | 0.8791  |         |        | 14-1059-1899 | 15-2642-9423 |
| 2     |      |       | 13  | 14:50 | 15.19   | 1.173   | 0.3352  |         |        | 18-0381-5742 | 02-7081-5629 |
| 3     |      | Aug   | 11  | 18:45 | 13.53   | -0.4944 | -0.1413 |         |        | 20-1611-7935 | 16-4659-9025 |
| 4     |      | Sep   | 11  | 10:30 | 20.68   | 6.66    | 1.903   |         |        | 16-0634-0120 | 05-0604-6072 |
| 5     |      |       | 12  | 16:00 | 16.53   | 2.506   | 0.7163  |         |        | 15-4225-8606 | 10-5374-9889 |
| 6     |      | Oct   | 9   | 15:15 | 13.13   | -0.8881 | -0.2538 |         |        | 03-2545-6769 | 13-7536-3945 |
| 7     |      |       | 23  | 14:41 | 18.31   | 4.291   | 1.226   |         |        | 07-8982-8813 | 00-2035-0705 |
| 8     |      | Nov   | 13  | 15:35 | 19.48   | 5.459   | 1.56    |         |        | 12-1068-1198 | 13-8500-6380 |
| 9     |      | Dec   | 13  | 15:40 | 13.43   | -0.5872 | -0.1678 |         |        | 18-0887-5478 | 08-5675-7260 |
| 10    |      |       | 18  | 16:10 | 16.68   | 2.66    | 0.7602  |         |        | 09-1125-6696 | 11-5924-9340 |
| 11    | 2019 | Jan   | 23  | 16:45 | 11.82   | -2.203  | -0.6295 |         |        | 16-9627-7772 | 06-9753-3662 |
| 12    |      | Feb   | 9   | 15:00 | 12.35   | -1.672  | -0.4778 |         |        | 03-4551-9020 | 18-2299-3422 |
| 13    |      |       | 20  | 16:25 | 15.52   | 1.5     | 0.4287  |         |        | 04-5763-2087 | 07-2228-2240 |
| 14    |      |       | 22  | 10:05 | 13.16   | -0.8551 | -0.2444 |         |        | 14-0040-4511 | 07-9343-7429 |
| 15    |      | Mar   | 26  | 11:45 | 10.9    | -3.119  | -0.8913 |         |        | 11-5844-3421 | 04-1285-3925 |
| 16    |      | Apr   | 16  | 16:02 | 9.409   | -4.611  | -1.318  |         |        | 10-9005-2409 | 20-3984-7468 |
| 17    |      |       | 24  | 10:35 | 13.41   | -0.6114 | -0.1747 |         |        | 08-2953-1939 | 18-4850-8813 |
| 18    |      | May   | 29  | 10:50 | 11.37   | -2.649  | -0.7572 |         |        | 01-6601-4847 | 13-7584-3720 |
| 19    |      | Jun   | 5   | 16:15 | 12.34   | -1.676  | -0.479  |         |        | 03-2581-8812 | 14-5424-8434 |
| 20    |      |       | 25  | 12:20 | 6.107   | -7.913  | -2.261  | (-)     |        | 13-8876-0205 | 08-8241-5491 |
| 21    |      | Jul   | 1   | 0:00  | 10.92   | -3.096  | -0.8847 |         |        | 15-6318-2369 | 20-3014-2815 |

Analyst: JU QA: 4777/24/19

### **CETIS Test Data Worksheet**

 Report Date:
 29 Jun-19 1

 Test Code:
 15-6318-236

29 Jun-19 13:40 (p 1 of 1) 15-6318-2369/190701spdv

| Echinoid Em                             | bryo-l | arval                      | Deve | lopment Te | st       |   | Nautilus Environmental (CA)                       |   |  |  |  |  |
|---|--------|----------------------------|------|------------|----------|---|---|---|--|--|--|--|
| Start Date:<br>End Date:<br>Sample Date | 04 J   | lul-19<br>lul-19<br>lul-19 |      | Materi     |          | centrotus purpuratus<br>/R-95/136 (1995)<br>hloride | Sample Code:<br>Sample Source:<br>Sample Station: | 190701spdv<br>Reference Toxicant<br>Copper Chloride |  |  |  |  |
| C-µg/L                                  | Code   | Rep                        | Pos  | # Counted  | # Normal |   | Notes   |   |  |  |  |  |
|   |        |                            | 1    | 100        | 0        | RT 7/   | 7.4/19  |   |  |  |  |  |
|   |        |                            | 2    | 1          | 97       |   |   |   |  |  |  |  |
|   |        |                            | 3    |            | 62       |   |   |   |  |  |  |  |
|   |        |                            | 4    |            | 97       |   |   |   |  |  |  |  |
|   |        |                            | 5    |            | 95       |   |   |   |  |  |  |  |
|   |        |                            | 6    |            | Ó        |   |   |   |  |  |  |  |
|   |        |                            | 7    |            | 97       |   |   |   |  |  |  |  |
|   |        |                            | 8    |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 9    |            | 92       |   |   |   |  |  |  |  |
|   |        |                            | 10   |            | 99       |   |   |   |  |  |  |  |
|   |        |                            | 11   |            | 89       |   |   |   |  |  |  |  |
|   |        |                            | 12   |            | 99       |   |   |   |  |  |  |  |
|   |        |                            | 13   |            | 90       |   |   |   |  |  |  |  |
|   |        |                            | 14   |            | 94       |   |   |   |  |  |  |  |
|   |        |                            | 15   |            | Ô        | ···· · · · · · · · · · · · · · · · · ·              |   |   |  |  |  |  |
|   |        |                            | 16   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 17   |            | 90       |   |   |   |  |  |  |  |
|   |        |                            | 18   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 19   |            | 0        | · · · · · · · · · · · · · · · · · · ·               |   |   |  |  |  |  |
|   |        |                            | 20   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 21   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 22   |            | 64       |   |   |   |  |  |  |  |
|   |        |                            | 23   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 24   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 25   |            | 66       |   |   |   |  |  |  |  |
|   |        |                            | 26   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 27   |            | 97       |   |   |   |  |  |  |  |
|   |        |                            | 28   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 29   |            | 0        |   |   |   |  |  |  |  |
|   |        |                            | 30   |            | 91       |   |   |   |  |  |  |  |
|   |        |                            | 31   |            | 69       |   |   |   |  |  |  |  |
|   |        |                            | 32   |            | 91       |   |   |   |  |  |  |  |
|   |        |                            | 33   |            | qq       |   |   |   |  |  |  |  |
|   |        |                            | 34   |            | 67       |   |   |   |  |  |  |  |
|   |        |                            | 35   | V          | Ő        |   | V   |   |  |  |  |  |

Analyst: FT QA: HTP7/24/19

#### **CETIS Test Data Worksheet**

Report Date: Test Code: 29 Jun-19 13:40 (p 1 of 1) 15-6318-2369/190701spdv

| Echinoid Em                              | bryo-l       | _arval | Deve | lopment Te | st       |   |   | Nautilus Environmental (CA)                         |
|--|--------------|--------|------|------------|----------|---|---|---|
| Start Date:<br>End Date:<br>Sample Date: | 04 J<br>01 J |        |      |            | -        | ylocentrotus purpuratus<br>00/R-95/136 (1995)<br>r chloride | Sample Code:<br>Sample Source:<br>Sample Station: | 190701spdv<br>Reference Toxicant<br>Copper Chloride |
| C-µg/L                                   | Code         | Rep    | Pos  | # Counted  | # Normal |   | Notes   |   |
| 0  | LC           | 1      | 12   |            |          |   |   |   |
| 0  | LC           | 2      | 5    |            |          |   |   |   |
| 0  | LC           | 3      | 33   | 100_       | 97       | TN 769  |   |   |
| 0  | LC           | 4      | 10   | 1-0-       |          |   |   |   |
| 0  | LC           | 5      | 2    |            |          |   |   |   |
| 2.5                                      |              | 1      | 9    |            |          |   |   |   |
| 2.5                                      |              | 2      | 14   |            |          |   |   |   |
| 2.5                                      |              | 3      | 27   | 100        | 98       | TN Florg  |   |   |
| 2.5                                      |              | 4      | 30   |            |          |   |   |   |
| 2.5                                      |              | 5      | 4    |            |          |   |   |   |
| 5  |              | 1      | 32   |            |          |   |   |   |
| 5  |              | 2      | 17   |            |          |   |   |   |
| 5  |              | 3      | 7    | DD         | 96       | TN 7/69   |   |   |
| 5  |              | 4      | 13   |            |          |   |   |   |
| 5  |              | 5      | 11   |            |          |   |   |   |
| 10                                       |              | 1      | 25   |            |          |   |   |   |
| 10                                       |              | 2      | 3    |            |          |   |   |   |
| 10                                       |              | 3      | 34   | 100        | 59       | TN 7/6/19   |   |   |
| 10                                       |              | 4      | 31   | <u> </u>   |          |   |   |   |
| 10                                       |              | 5      | 22   |            |          |   |   |   |
| 20                                       |              | 1      | 6    |            |          |   |   |   |
| 20                                       |              | 2      | 20   |            |          |   |   |   |
| 20                                       |              | 3      | 16   | 00         | 0        | TN 7/6/19   |   |   |
| 20                                       |              | 4      | 8    |            |          |   |   |   |
| 20                                       |              | 5      | 28   |            |          |   |   |   |
| 40                                       |              | 1      | 24   |            |          |   |   |   |
| 40                                       |              | 2      | 29   |            |          |   |   |   |
| 40                                       |              | 3      | 35   | 100        | 0        | TN 7/6/19   |   |   |
| 40                                       | :            | 4      | 21   |            |          |   |   |   |
| 40                                       |              | 5      | 15   |            |          |   |   |   |
| 80                                       |              | 1      | 23   |            |          |   |   |   |
| 80                                       |              | 2      | 18   |            |          |   |   |   |
| 80                                       |              | 3      | 1    | 100        | 0        | TN 7/6/1C   |   |   |
| 80                                       |              | 4      | 26   |            |          |   |   |   |
| 80                                       |              | 5      | 19   |            |          |   |   |   |
|  |              | ~      |      |            |          |   |   |   |

ØC=AC



| Nautilus Envirc | onmental. 434 | 0 Vandever | Avenue. | San Diego, | CA 92120. |
|-----------------|---------------|------------|---------|------------|-----------|
|-----------------|---------------|------------|---------|------------|-----------|

# Marine Chronic Bioassay

Client: Internal

Sample ID: CuCl<sub>2</sub>

Test No.: 190701spdv

| Test Species    | S. purpuratus |
|-----------------|---------------|
| Start Date/Time | 7/1/2019 1015 |
| End Date/Time   | 7/4/2019 1035 |

| Concentration | Salinity |      |      |      |      | Temp | erature |      | Dissolved Oxygen |        |     |     | рН   |            |      |      |  |
|---------------|----------|------|------|------|------|------|---------|------|------------------|--------|-----|-----|------|------------|------|------|--|
| (µg/L)        |          | (p   | pt)  |      |      | (°C) |         |      |                  | (mg/L) |     |     |      | (pH units) |      |      |  |
|               | 0        | 24   | 48   | 72   | 0    | 24   | 48      | 72   | 0                | 24     | 48  | 72  | 0    | 24         | 48   | 72   |  |
| Lab Control   | 33.7     | 33.8 | 34.1 | 34.1 | 147  | 151  | 149     | 14.7 | 8.9              | 8.4    | 8.4 | 8.3 | 7,99 | 8.00       | 8.00 | 7.98 |  |
| 2.5           | 33.7     | 34.4 | 34.3 | 34.2 | 14.6 | 14.6 | 14.6    | 14.6 | 8.8              | 8.5    | 8.4 | 8.3 | 8.00 | 8.00       | 8.01 | 7.95 |  |
| 5             | 33.8     | 34.4 | 34.4 | 34.3 | 14.5 | 14.8 | 14.5    | 14.6 | 8.8              | 8.5    | 8.5 | 8.2 | 8.00 | 8.01       | 8.01 | 7.95 |  |
| 10            | 33.8     | 34.4 | 34.4 | 34.2 | 145  | 14.8 | 14.3    | 14.7 | 8.9              | 8.4    | 8.5 | 8.2 | 8.01 | 8.01       | 8.01 | 7.95 |  |
| 20            | 33.8     | 34.4 | 34.4 | 34.3 | 14.6 | 15.) | 14.7    | 14.8 | 8.8              | 3.4    | 8.4 | 8.Z | 8.01 | 8.01       | 8.01 | 7.95 |  |
| 40            | 33.7     | 34-3 | 34.3 | 34.1 | 14,5 | 14.9 | 14.6    | 14.8 | G. B             | 8.4    | 8.4 | 8.1 | 8.02 | 8-0Z       | 8.01 | 7.95 |  |
| 80            | 33.8     | 33.9 | 34.2 | 34.Z | 14.3 | 14.9 | 14.6    | 14.7 | 8.8              | 8.4    | 8.4 | 8.2 | 8.03 | 8.02       | 8.01 | 7-95 |  |

| Technician Initials: | WQ Reading<br>Dilutions made b | <br>24<br>  RT<br>  - | <b>48</b><br>BO<br> | 72<br>BO<br> | High conc. made (μg/L): 80<br>Vol. Cu stock added (mL): 4,5<br>Final Volume (mL): 500<br>Cu stock concentration (μg/L): 9000 |
|----------------------|--------------------------------|-----------------------|---------------------|--------------|--|
| Comments:            | 0 hrs:<br>24 hrs:              | <br>                  |                     |              |  |
|                      | 48 hrs:<br>72 hrs:             | <br>                  |                     |              | 2  |
| QC Check:            | KAP 7/24/19                    | <br>                  |                     |              | Final Review: _ 🎉 ७/८%/۱۹  |

# Water Quality Measurements

#### Marine Chronic Bioassay

# Echinoderm Larval Development Worksheet

| Client:<br>Sample ID:<br>Test No.:                    | OthernalStart Date/Time:7/1/201911015MOL2End Date/Time:7/4/201910351907015pdVSpecies:S. purpuratus   |   |
|---|--|---|
| Tech initials:<br>Injection Time:                     | EG<br>6955 Date Collected: 5/3/19  | - |
| Sperm Absorbance at 40                                | 0 nm: $i$ , $056$ (target range of 0.8 - 1.0 for density of 4x10 <sup>6</sup> sperm/ml)  |   |
| Eggs Counted:   | $42$ Mean: $58.6 \times 50 = 2930$ eggs/ml $46$ (target counts of 20 eggs per vertical pass on Sedgwick-Rafter<br>slide for a final density of 1000 eggs/ml) $62$ $72$   |   |
| Initial density:<br>Final density:                    | $\frac{2930}{1000} \text{ eggs/ml} = \frac{2.93}{-1.0} \text{ dilution factor} \text{ egg stock} \frac{500}{-1.0} \text{ ml}$ $\frac{1.93}{-1.0} \text{ part egg stock} \text{ seawater} \frac{1.00}{-1.0} \text{ egg stock} \text{ seawater} \frac{1.00}{-1.0} \text{ egg stock} \text{ seawater} \frac{1.00}{-1.0} \text{ ml}$ |   |
| Prepare the egg stock ac part) and 125 ml of dilution | cording to the calculated dilution factor. For example, if the dilution factor is 2.25, use 100 ml of existing stock (<br>n water (1.25 parts).  | 1 |

Add 100  $\mu$ L sperm stock per 100mL of egg stock. For example, if you have 60mL of egg stock, add 60 $\mu$ L sperm stock.

Embryo Stock Fertilization Checks (Initiate test only when fertilization is ≥90%):

| Fertilization Time: 100                                 | 5                                  | Time                             |                    | No.<br>Fert. | No.<br>Unfert.               | %            |                |                  |      |
|---|------------------------------------|----------------------------------|--------------------|--------------|------------------------------|--------------|----------------|------------------|------|
| 5 minutes (1st fert.) che<br>10 minutes (2nd fert. If r |                                    | 1010                             |                    | 91           |                              | 99           |                |                  |      |
| Test Initiation Time:<br>Test initiation must be w      | 1015<br>ithin 1 hour               |                                  |                    | Embryo S     | Stock Added:                 | 0.25 ml      |                |                  |      |
| Test Termination:                                       |                                    |                                  |                    |              |                              |              |                |                  |      |
| 72-hour QC check 1ª<br>QC check 2                       | No.<br><u>Normal</u><br><u>IOO</u> | No.<br>Abnormal                  | %<br>Normal<br>100 | !            |                              |              |                |                  |      |
| Comments:   |                                    | bryo developr<br>I, continue the |                    |              | t the mean test<br>TM 1999). | acceptabilit | y criterion of | 80% normally     |      |
| QC Check:   | KAP 7                              | 124/19                           | _                  |              |                              |              | Final Revi     | ew: <u>147/2</u> | 1/19 |

Appendix E Laboratory Qualifier Codes



#### **Glossary of Qualifier Codes:**

- Q1 Temperatures out of recommended range; corrective action taken and recorded in Test Temperature Correction Log
- Q2 Temperatures out of recommended range; no action taken, test terminated same day
- Q3 Sample aerated prior to initiation or renewal due to dissolved oxygen (D.O.) levels below 6.0 mg/L
- Q4 Test aerated; D.O. levels dropped below 4.0 mg/L
- Q5 Test initiated with aeration due to an anticipated drop in D.O.
- Q6 Airline obstructed or fell out of replicate and replaced; drop in D.O. occurred
- Q7 Salinity out of recommended range
- Q8 Spilled test chamber/ Unable to recover test organism(s)
- Q9 Inadequate sample volume remaining, 50% renewal performed
- Q10 Inadequate sample volume remaining, no renewal performed
- Q11 Sample out of holding time; refer to QA section of report
- Q12 Replicate(s) not initiated; excluded from data analysis
- Q13 Survival counts not recorded due to poor visibility or heavy debris
- Q14 D.O. percent saturation was checked and was  $\leq 110\%$
- Q15 Did not meet minimum test acceptability criteria. Refer to QA section of report.
- Q16 Percent minimum significant difference (PMSD) was <u>below</u> the lower bound limit for acceptability. This indicates that statistics may be over-sensitive in detecting a difference from the control due to low variability in the data set.
- Q17 Percent minimum significant difference (PMSD) was <u>above</u> the upper bound limit for acceptability. This indicates that statistics may be under-sensitive in detecting a difference from the control due to high variability in the data set.
- Q18 Incorrect Entry
- Q19 Illegible Entry
- Q20 Miscalculation
- Q21 Other (provide reason in comments section)
- Q22 Greater than 10% <u>mortality</u> observed upon receipt and/or in holding prior to test initiation. Organisms acclimated to test conditions at Nautilus and ultimately deemed fit to use for testing.
- Q23 Test organisms received at a <u>temperature</u> greater than 3°C outside the recommended test temperature range. However, due to age-specific protocol requirements and/or sample holding time constraints, the organisms were used to initiate tests upon the day of arrival. Organisms were acclimated to the appropriate test conditions upon receipt and prior to test initiation.
- Q24 Test organisms received at <u>salinity</u> greater than 3 ppt outside of the recommended test salinity range. However, due to age-specific protocol requirements and/or sample holding time constraints, the organisms were used to initiate tests upon the day of arrival. Organisms were acclimated to the appropriate test conditions upon receipt and prior to test initiation.

# APPENDIX B TestAmerica Laboratory Reports and Data Validation Reports

# 🔅 eurofins

# Environment Testing TestAmerica

# **ANALYTICAL REPORT**

# Eurofins TestAmerica, Irvine 17461 Derian Ave

Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

# Laboratory Job ID: 440-244608-1

Client Project/Site: Ocean Disposal WW Sample Revision: 1

# For:

Geosyntec Consultants, Inc. 295 Hagey Blvd. Suite 290 Waterloo, Ontario N2L 6R5

Attn: Nick Butson

Authorized for release by: 7/25/2019 4:57:35 PM

Lena Davidkova, Project Manager II (949)260-3229 Iena.davidkova@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Review your project results through

LINKS



Visit us at: www.testamericainc.com

# **Table of Contents**

| Cover Page             | 1  |
|------------------------|----|
| Table of Contents      | 2  |
| Sample Summary         | 3  |
| Case Narrative         | 4  |
| Client Sample Results  | 7  |
| Method Summary         | 14 |
| Lab Chronicle          | 15 |
| QC Sample Results      | 19 |
| QC Association Summary | 34 |
| Definitions/Glossary   | 41 |
| Certification Summary  | 42 |
| Subcontract Data       | 46 |
| Chain of Custody       | 59 |
| Receipt Checklists     | 65 |
| Field Data Sheets      | 69 |
|                        |    |

# **Sample Summary**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-244608-1

| Lab Sample ID | Client Sample ID | Matrix | Collected      | Received       | Asset II |
|---------------|------------------|--------|----------------|----------------|----------|
| 440-244608-1  | 0620 BUTCHER     | Water  | 06/20/19 06:11 | 06/26/19 10:30 |          |
| 440-244608-2  | 0620 OD STREAMS  | Water  | 06/20/19 06:33 | 06/26/19 10:30 |          |
| 440-244608-3  | 0621 BUTCHER     | Water  | 06/21/19 06:01 | 06/26/19 10:30 |          |
| 440-244608-4  | 0621 OD STREAMS  | Water  | 06/21/19 06:20 | 06/26/19 10:30 |          |

#### Job ID: 440-244608-1

#### Laboratory: Eurofins TestAmerica, Irvine

Narrative

Job Narrative 440-244608-1

#### Comments

This it final report. Pyrethrins results were included under this cover

#### Receipt

The samples were received on 6/26/2019 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 11.5° C, 11.9° C, 12.1° C and 16.5° C.

#### **Receipt Exceptions**

The following samples were received at the laboratory outside the required temperature criteria: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4). Received samples on thawed blue ice. The temperatures recorded were: 16.8/16.5, 12.2/11.9, 12.4/12.1, 11.8/11.5 IR 94 outside the required temperature criteria.

#### GC/MS VOA

Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 440-555513 recovered above the upper control limit for Ethylbenzene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: 0620 OD STREAMS (440-244608-2), 0621 OD STREAMS (440-244608-4) and (CCVIS 440-555513/2).

Method(s) 8260B: The following samples were diluted due to the abundance of non-target analytes: 0620 OD STREAMS (440-244608-2) and 0621 OD STREAMS (440-244608-4). Elevated reporting limits (RLs) are provided.

Method(s) 8260B: The samples were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was 6 and the following samples were analyzed after 7 days from sampling: 0620 OD STREAMS (440-244608-2) and 0621 OD STREAMS (440-244608-4).

Method(s) 8260B: The following volatile samples were analyzed with significant headspace in the sample container(s): 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4). Significant headspace is defined as a bubble greater than 6 mm in diameter.

Method(s) 8260B: The following volatile samples were received and analyzed with significant headspace in the sample vials: 0620 BUTCHER (440-244608-1) and 0621 BUTCHER (440-244608-3). Significant headspace is defined as a bubble greater than 6 mm in diameter.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC/MS Semi VOA

Method(s) 625: Surrogate recovery for the following samples were outside control limits: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 625: The following samples were diluted due to the nature of the sample matrix: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4). Elevated reporting limits (RLs) are provided. Samples could not be run at a lower dilution without risking instrument damage.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### HPLC/IC

Method(s) 300.0: The following samples were received outside of holding time: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### Job ID: 440-244608-1 (Continued)

#### Laboratory: Eurofins TestAmerica, Irvine (Continued)

#### Metals

Method(s) 6010B: The following samples were diluted due to the nature of the sample matrix: 0620 BUTCHER (440-244608-1) and 0621 BUTCHER (440-244608-3). Elevated reporting limits (RLs) are provided.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision of Aluminum for preparation batch 440-554883 and analytical batch 440-555055 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) precision was within acceptance limits.

The following samples were diluted due to the nature of the sample matrix: 0620 OD STREAMS (440-244608-2) and 0621 OD STREAMS (440-244608-4). Elevated reporting limits (RLs) are provided.

Method(s) 200.7 Rev 4.4, 6010B: The following samples were diluted due to the nature of the sample matrix: 0620 OD STREAMS (440-244608-2) and 0621 OD STREAMS (440-244608-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

Method(s) 353.2: The following samples were diluted in analytical batch 320-306826 due to the nature of the sample matrix: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4). Samples were a dark brown color, had high sediment, and were extremely difficult to filter Elevated reporting limits (RLs) are provided. Data is being reported with this narration.

Method(s) 365.3: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-555362 and analytical batch 440-555384 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 410.4, SM 5220D: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of 7: 0621 OD STREAMS (440-244608-4). The sample(s) was preserved to the appropriate pH in the laboratory.

Method(s) 351.2: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-555267 and analytical batch 440-555602 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Organic Prep**

Method(s) 8315\_W\_Prep: Sample received was cloudy olive green murky strong odor with a pH of 7. Adjusted pH of 3, after I added DNPH to make the color change. Initial reaction was murky yellow. Heavy emulsion. Method 8315 0621 OD STREAMS (440-244608-4), (440-244608-P-4 MS) and (440-244608-P-4 MSD)

Method(s) 8315\_W\_Prep: Sample received was cloudy green strong odor with residue, a pH of 7. Adjusted pH of 3, after I added DNPH to make the color change. Initial reaction was murky yellow. Heavy emulsion. Method 8315 0620 OD STREAMS (440-244608-2)

Method(s) 8315\_W\_Prep: Sample received was cloudy red strong odor with residue, a pH of 7. Adjusted pH of 3, after I added DNPH to make the color change. Initial reaction was murky brown. Heavy emulsion. Method 8315 0620 BUTCHER (440-244608-1)

Method(s) 8315\_W\_Prep: Sample received was cloudy pink brown murky strong odor with residue, a pH of 7. Adjusted pH of 3, after I added DNPH to make the color change. Initial reaction was murky yellow light brown. Heavy emulsion. Method 8315 0621 BUTCHER (440-244608-3)

Method(s) 8315\_W\_Prep: The following samples were received outside of holding time: 0620 BUTCHER (440-244608-1), 0620 OD

### Job ID: 440-244608-1 (Continued)

#### Laboratory: Eurofins TestAmerica, Irvine (Continued)

STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4).

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-555027. 625-REG. LCS was performed in duplicate to provide precision of data.

Method(s) 625: Sample has heavy emulsion and precipitate. Possible low surrogate recovery. 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4)

Method(s) 1664A: The reference method requires samples to be preserved to a pH of <2. The following samples were received with insufficient preservation at a pH of >2: 0620 OD STREAMS (440-244608-2) and 0621 OD STREAMS (440-244608-4). The samples were preserved to the appropriate pH in the laboratory. Method 1664A.

Method(s) 1664A: The following samples were diluted due to the nature of the sample matrix: 0620 BUTCHER (440-244608-1) and 0621 BUTCHER (440-244608-3) were diluted 5x (200ml sample diluted to 1L). Elevated reporting limits (RLs) are provided. Method 1664A.

Method(s) 1664A: The following samples were diluted due to the nature of the sample matrix: 0620 OD STREAMS (440-244608-2) and 0621 OD STREAMS (440-244608-4) were diluted 10x (100ml sample diluted to 1L). Elevated reporting limits (RLs) are provided. Method 1664A.

Method(s) 1664A, 1664B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-555282 and analytical batch 440-555325. The Laboratory Control Sample (LCS) was performed in duplicate to provide precise data for this batch. Method 1664.

Method(s) 8315\_W\_Prep: The following samples were diluted due to the nature of the sample matrix: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4). Elevated reporting limits (RLs) are provided.

Method(s) 8315\_W\_Prep: Sample was cloudy light green with residue strong odor. Adjust pH of 3. Heavy emulsion. 0620 OD STREAMS (440-244608-2)

Method(s) 8315\_W\_Prep: Sample was cloudy green color, strong odor. Adjust pH of 3. Heavy emulsion 0621 OD STREAMS (440-244608-4)

Method(s) 625: Due to the matrix, the following samples could not be concentrated to the final method required volume: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4). The reporting limits (RLs) are elevated proportionately. Method 625-REG.

Method(s) 8315\_W\_Prep: The following samples were received outside of holding time: 0620 BUTCHER (440-244608-1), 0620 OD STREAMS (440-244608-2), 0621 BUTCHER (440-244608-3) and 0621 OD STREAMS (440-244608-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

RL

2.0

2.0

2.0

2.0

2.0

5.0

2.0

2.0

2.0

MDL Unit

0.25 ug/L

0.25 ug/L

0.25 ug/L

0.25 ug/L

0.50 ug/L

1.1 ug/L

0.25 ug/L

0.25 ug/L

0.25 ug/L

D

Prepared

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

#### Client Sample ID: 0620 BUTCHER Date Collected: 06/20/19 06:11 Date Received: 06/26/19 10:30

Analyte

Benzene

Chloroform

m,p-Xylene

o-Xylene

Toluene

Xylenes, Total

Ethylbenzene

Methylene Chloride

1,2-Dichloropropane

Method: 8260B - Volatile Organic Compounds (GC/MS)

**Result Qualifier** 

ND

ND

ND

ND

ND

ND

0.50 J

0.83 J

1.6 J

| .lob | ١D·   | 440-244608-1 |
|------|-------|--------------|
| 000  | · D . | 110 211000 1 |

# Lab Sample ID: 440-244608-1

Analyzed

07/02/19 11:30

07/02/19 11:30

07/02/19 11:30

07/02/19 11:30

07/02/19 11:30

07/02/19 11:30

07/02/19 11:30

07/02/19 11:30

07/02/19 11:30

Matrix: Water

Dil Fac

1

1

1

1

1

1

1

1

1

| Surrogate                                 | %Recovery  | Qualifier             | Limits    |       |      |   | Prepared                   | Analyzed                   | Dil Fac |
|---|------------|-----------------------|-----------|-------|------|---|----------------------------|----------------------------|---------|
| 4-Bromofluorobenzene (Surr)               | 110        |                       | 80 - 120  |       |      |   |                            | 07/02/19 11:30             | 1       |
| Dibromofluoromethane (Surr)               | 104        |                       | 76 - 132  |       |      |   |                            | 07/02/19 11:30             | 1       |
| Toluene-d8 (Surr)                         | 107        |                       | 80 - 128  |       |      |   |                            | 07/02/19 11:30             | 1       |
| Method: 625 - Semivolatile Org            | anic Com   | oounds (G             | C/MS)     |       |      |   |                            |                            |         |
| Analyte                                   | -          | Qualifier             | RL        | MDL   | Unit | D | Prepared                   | Analyzed                   | Dil Fac |
| Bis(2-ethylhexyl) phthalate               | ND         |                       | 200       | 40    | ug/L |   | 06/27/19 12:00             | 07/01/19 07:00             | 5       |
| Surrogate                                 | %Recovery  | Qualifier             | Limits    |       |      |   | Prepared                   | Analyzed                   | Dil Fac |
| 2-Fluorobiphenyl                          | 46         | X                     | 50 - 120  |       |      |   | 06/27/19 12:00             | 07/01/19 07:00             | 5       |
| 2-Fluorophenol                            | 54         |                       | 30 - 120  |       |      |   | 06/27/19 12:00             | 07/01/19 07:00             | 5       |
| 2,4,6-Tribromophenol                      | 30         | X                     | 40 - 120  |       |      |   | 06/27/19 12:00             | 07/01/19 07:00             | 5       |
| Nitrobenzene-d5                           | 81         |                       | 45 - 120  |       |      |   | 06/27/19 12:00             | 07/01/19 07:00             | 5       |
| Terphenyl-d14                             | 20         |                       | 10 - 150  |       |      |   | 06/27/19 12:00             | 07/01/19 07:00             | 5       |
| Phenol-d6                                 | 106        |                       | 35 - 120  |       |      |   | 06/27/19 12:00             | 07/01/19 07:00             | 5       |
| Method: 8315A - Carbonyl Cor              | mpounds (H |                       |           |       |      |   |                            |                            |         |
| Analyte                                   |            | Qualifier             | RL        |       | Unit | D | Prepared                   | Analyzed                   | Dil Fac |
| Formaldehyde                              | 0.052      | н                     | 0.050     | 0.025 | mg/L |   | 06/29/19 05:05             | 07/01/19 12:41             | 1       |
| Method: NO3NO2 Calc - Nitrog<br>Analyte   |            | -Nitrite<br>Qualifier | RL        | MDL   | Unit | D | Prepared                   | Analyzed                   | Dil Fac |
| Nitrate as N                              | ND         |                       | 2.2       | 1.1   |      |   |                            | 07/01/19 15:00             | 1       |
| Nitrite as N                              | ND         |                       | 3.0       |       | mg/L |   |                            | 07/01/19 15:00             | 1       |
| Nitrate Nitrite as N                      | ND         |                       | 3.0       |       | mg/L |   |                            | 07/01/19 15:00             | 1       |
|   | Total Deer |                       |           |       |      |   |                            |                            |         |
| Method: 6010B - Metals (ICP) -<br>Analyte |            | Qualifier             | RL        | МП    | Unit | D | Proparad                   | Analyzod                   | Dil Fac |
| Aluminum                                  | ND         | Quaimer               | <b>KL</b> |       | mg/L | D | Prepared<br>06/26/19 17:58 | Analyzed<br>06/27/19 13:29 | 10      |
| Arsenic                                   | 0.23       |                       | 0.10      |       | -    |   |                            | 06/27/19 13:29             | 10      |
|   | 0.23<br>ND |                       |           | 0.089 | -    |   |                            | 06/27/19 13:29             |         |
| Barium                                    |            |                       | 0.10      | 0.050 |      |   |                            |                            | 10      |
| Boron                                     | ND         |                       | 0.50      | 0.25  | 0    |   |                            | 06/27/19 13:29             | 10      |
| Cadmium                                   | 0.050      |                       | 0.050     | 0.025 | Ũ    |   |                            | 06/27/19 13:29             | 10      |
| Chromium                                  | ND         |                       | 0.050     | 0.025 |      |   |                            | 06/27/19 13:29             | 10      |
| Copper                                    | 0.074      | J                     | 0.10      | 0.050 | 0    |   |                            | 06/27/19 13:29             | 10      |
| Magnesium                                 | 33         |                       | 0.20      |       | mg/L |   |                            | 06/27/19 13:29             | 10      |
| Manganese                                 | ND         |                       | 0.20      |       | mg/L |   |                            | 06/27/19 13:29             | 10      |
| Nickel                                    | ND         |                       | 0.10      | 0.050 | -    |   |                            | 06/27/19 13:29             | 10      |
| Selenium                                  | 0.16       |                       | 0.10      | 0.087 | mg/L |   | 06/26/19 17:58             | 06/27/19 13:29             | 10      |
| Titanium                                  | ND         |                       | 0.050     | 0.025 | mg/L |   | 06/26/19 17:58             | 06/27/19 13:29             | 10      |
|   |            |                       |           |       |      |   | Eurofia                    | c TootAmorios              | Invine  |

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

#### Client Sample ID: 0620 BUTCHER Date Collected: 06/20/19 06:11 Date Received: 06/26/19 10:30

| Analyte                      | Result      | Qualifier | RL     | MDL     | Unit    | D | Prepared       | Analyzed       | Dil Fac |
|------------------------------|-------------|-----------|--------|---------|---------|---|----------------|----------------|---------|
| Zinc                         | 1.3         | ·         | 0.20   | 0.12    | mg/L    |   | 06/26/19 17:58 | 06/27/19 13:29 | 10      |
| Method: 7470A - Mercury (CVA | <b>AA</b> ) |           |        |         |         |   |                |                |         |
| Analyte                      |             | Qualifier | RL     | MDL     | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Mercury                      | 0.0043      |           | 0.0010 | 0.00050 | mg/L    |   | 07/01/19 16:27 | 07/02/19 12:25 | 5       |
| General Chemistry            |             |           |        |         |         |   |                |                |         |
| Analyte                      | Result      | Qualifier | RL     | MDL     | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| НЕМ                          | 330         |           | 25.0   | 7.0     | mg/L    |   | 06/28/19 15:07 | 06/28/19 18:55 | 1       |
| Total Kjeldahl Nitrogen      | 1000        |           | 50     | 25      | mg/L    |   | 06/28/19 14:14 | 06/28/19 21:47 | 5       |
| Nitrate Nitrite as N         | ND          |           | 5.0    | 0.31    | mg/L    |   |                | 07/10/19 10:57 | 100     |
| Phosphorus, Total            | 100         |           | 50     | 25      | mg/L    |   | 06/29/19 08:17 | 06/29/19 10:49 | 1       |
| Phenolics, Total Recoverable | 0.10        |           | 0.050  | 0.025   | mg/L    |   | 07/01/19 10:02 | 07/02/19 10:49 | 1       |
| Cyanide, Total               | ND          |           | 0.025  | 0.013   | mg/L    |   | 06/27/19 14:53 | 06/27/19 20:43 | 1       |
| Ammonia (as N)               | 62          |           | 13     | 2.5     | mg/L    |   | 07/02/19 04:00 | 07/02/19 07:00 | 1       |
| Ammonia as NH3               | 75          |           | 15     | 3.0     | mg/L    |   | 07/02/19 04:00 | 07/02/19 07:00 | 1       |
| Chemical Oxygen Demand       | 12000       |           | 1000   | 500     | mg/L    |   |                | 07/01/19 18:37 | 50      |
| Analyte                      | Result      | Qualifier | RL     | RL      | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Total Volatile Solids        | 12000       |           | 200    | 200     | mg/L    |   |                | 06/26/19 19:05 | 1       |
| Specific Gravity             | 0.97        |           | 0.010  | 0.010   | No Unit |   |                | 07/10/19 15:27 | 1       |
| Total Solids                 | 17000       |           | 200    | 200     | mg/L    |   |                | 06/26/19 17:46 | 1       |
| Nitrogen, Total              | 1000        |           | 0.11   | 0.11    | mg/L    |   |                | 07/03/19 14:08 | 1       |

#### Client Sample ID: 0620 OD STREAMS Date Collected: 06/20/19 06:33 Date Received: 06/26/19 10:30

| Analyte                     | Result    | Qualifier | RL       | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|-----|------|---|----------|----------------|---------|
| 1,2-Dichloropropane         | ND        |           | 20       | 2.5 | ug/L |   |          | 07/01/19 15:55 | 10      |
| Benzene                     | ND        |           | 20       | 2.5 | ug/L |   |          | 07/01/19 15:55 | 10      |
| Chloroform                  | ND        |           | 20       | 2.5 | ug/L |   |          | 07/01/19 15:55 | 10      |
| Ethylbenzene                | ND        |           | 20       | 2.5 | ug/L |   |          | 07/01/19 15:55 | 10      |
| m,p-Xylene                  | ND        |           | 20       | 5.0 | ug/L |   |          | 07/01/19 15:55 | 10      |
| Methylene Chloride          | ND        |           | 50       | 11  | ug/L |   |          | 07/01/19 15:55 | 10      |
| o-Xylene                    | ND        |           | 20       | 2.5 | ug/L |   |          | 07/01/19 15:55 | 10      |
| Toluene                     | ND        |           | 20       | 2.5 | ug/L |   |          | 07/01/19 15:55 | 10      |
| Xylenes, Total              | ND        |           | 20       | 2.5 | ug/L |   |          | 07/01/19 15:55 | 10      |
| Surrogate                   | %Recovery | Qualifier | Limits   |     |      |   | Prepared | Analyzed       | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 92        |           | 80 - 120 |     |      |   |          | 07/01/19 15:55 | 10      |
| Dibromofluoromethane (Surr) | 92        |           | 76 - 132 |     |      |   |          | 07/01/19 15:55 | 10      |
| Toluene-d8 (Surr)           | 106       |           | 80 - 128 |     |      |   |          | 07/01/19 15:55 | 10      |

# Method: 625 - Semivolatile Organic Compounds (GC/MS)

| Analyte<br>Bis(2-ethylhexyl) phthalate | Result<br>ND | Qualifier | <b>RL</b><br>830 | <br>Unit<br>ug/L | D | Prepared<br>06/27/19 12:00 | Analyzed<br>07/01/19 08:14 | Dil Fac<br>20 |
|--|--------------|-----------|------------------|------------------|---|----------------------------|----------------------------|---------------|
| Surrogate                              | %Recovery    | Qualifier | Limits           |                  |   | Prepared                   | Analyzed                   | Dil Fac       |
| 2-Fluorobiphenyl                       | 0            | X         | 50 - 120         |                  |   | 06/27/19 12:00             | 07/01/19 08:14             | 20            |
| 2-Fluorophenol                         | 20           | X         | 30 - 120         |                  |   | 06/27/19 12:00             | 07/01/19 08:14             | 20            |

Eurofins TestAmerica, Irvine

Job ID: 440-244608-1

**Matrix: Water** 

Lab Sample ID: 440-244608-1

#### Lab Sample ID: 440-244608-2 Matrix: Water

#### Client Sample ID: 0620 OD STREAMS Date Collected: 06/20/19 06:33 Date Received: 06/26/19 10:30

Job ID: 440-244608-1

### Lab Sample ID: 440-244608-2 Matrix: Water

5

| Surrogate                    | %Recovery     | Qualifier | Limits     |         |              |   | Prepared                   | Analyzed                   | Dil Fac |
|------------------------------|---------------|-----------|------------|---------|--------------|---|----------------------------|----------------------------|---------|
| 2,4,6-Tribromophenol         | 0             | X         | 40 - 120   |         |              |   | 06/27/19 12:00             | 07/01/19 08:14             | 20      |
| Nitrobenzene-d5              | 0             | X         | 45 - 120   |         |              |   | 06/27/19 12:00             | 07/01/19 08:14             | 20      |
| Terphenyl-d14                | 0             | X         | 10 - 150   |         |              |   | 06/27/19 12:00             | 07/01/19 08:14             | 20      |
| Phenol-d6                    | 0             | X         | 35 - 120   |         |              |   | 06/27/19 12:00             | 07/01/19 08:14             | 20      |
| Method: 8315A - Carbonyl Co  | ompounds (H   |           |            |         |              |   |                            |                            |         |
| Analyte                      |               | Qualifier | RL         | MDL     | Unit         | D | Prepared                   | Analyzed                   | Dil Fac |
| Formaldehyde                 | 0.080         | H         | 0.050      | 0.025   | mg/L         |   | 06/29/19 05:05             | 07/01/19 13:02             |         |
| Method: NO3NO2 Calc - Nitro  | ogen, Nitrate | -Nitrite  |            |         |              |   |                            |                            |         |
| Analyte                      | Result        | Qualifier | RL         | MDL     | Unit         | D | Prepared                   | Analyzed                   | Dil Fa  |
| Nitrate as N                 | ND            | Н         | 11         | 5.5     | mg/L         |   |                            | 07/01/19 15:00             |         |
| Nitrite as N                 | ND            | Н         | 15         | 2.5     | mg/L         |   |                            | 07/01/19 15:00             |         |
| Nitrate Nitrite as N         | ND            | Н         | 15         | 5.5     | mg/L         |   |                            | 07/01/19 15:00             |         |
| Method: 6010B - Metals (ICP) |               |           |            |         |              |   |                            |                            |         |
| Analyte                      |               | Qualifier | RL         |         | Unit         | D | Prepared                   | Analyzed                   | Dil Fa  |
| Aluminum                     | 490           |           | 0.50       |         | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             |         |
| Arsenic                      | 0.78          |           | 0.050      | 0.045   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             | 1       |
| Barium                       | 0.12          |           | 0.050      | 0.025   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             | :       |
| Boron                        | 0.81          |           | 0.25       | 0.13    | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             |         |
| Cadmium                      | 0.15          |           | 0.025      | 0.013   | 0            |   | 07/05/19 09:49             | 07/05/19 19:57             | :       |
| Chromium                     | 0.18          |           | 0.025      | 0.013   | -            |   | 07/05/19 09:49             | 07/05/19 19:57             | :       |
| Copper                       | 0.36          |           | 0.050      | 0.025   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             |         |
| Magnesium                    | 180           |           | 0.10       | 0.050   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             | :       |
| Manganese                    | 0.16          |           | 0.10       | 0.075   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             | 4       |
| Nickel                       | 0.064         |           | 0.050      | 0.025   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             |         |
| Selenium                     | 0.53          |           | 0.050      | 0.044   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             |         |
| Titanium                     | 0.40          |           | 0.025      | 0.013   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             |         |
| Zinc                         | 24            |           | 0.10       | 0.060   | mg/L         |   | 07/05/19 09:49             | 07/05/19 19:57             |         |
| Method: 7470A - Mercury (C\  |               |           |            |         |              |   |                            |                            |         |
| Analyte                      |               | Qualifier | RL         |         | Unit         | D | Prepared                   | Analyzed                   | Dil Fa  |
| Mercury                      | 0.0046        |           | 0.0010     | 0.00050 | mg/L         |   | 07/01/19 16:27             | 07/02/19 12:28             | į       |
| General Chemistry            | Desult        | Qualifian | DI.        | MDI     | 11           |   | Duo u o u o d              | Awahanad                   |         |
| Analyte<br>HEM               |               | Qualifier | RL<br>50.0 |         | Unit<br>mg/L | D | Prepared<br>06/28/19 15:07 | Analyzed<br>06/28/19 18:55 | Dil Fa  |
|                              | 6370<br>2700  |           |            |         |              |   |                            |                            |         |
| Total Kjeldahl Nitrogen      | 3700          |           | 100        |         | mg/L         |   | 00/20/19 14:14             | 06/28/19 21:50             | 10      |
| Nitrate Nitrite as N         | ND            |           | 5.0        |         | mg/L         |   | 06/00/40 00:47             | 07/10/19 11:01             | 10      |
| Phosphorus, Total            | 550           |           | 100        |         | mg/L         |   | 06/29/19 08:17             |                            |         |
| Phenolics, Total Recoverable | 7.2           |           | 1.0        |         | mg/L         |   | 07/01/19 10:02             |                            | 2       |
| Cyanide, Total               | 0.045         |           | 0.025      | 0.013   |              |   | 06/27/19 14:53             |                            |         |
| Ammonia (as N)               | 1800          |           | 250        |         | mg/L         |   |                            | 07/02/19 07:00             |         |
| Ammonia as NH3               | 2200          |           | 300        |         | mg/L         |   | 07/02/19 04:00             | 07/02/19 07:00             | 05      |
| Chemical Oxygen Demand       | 74000         |           | 5000       | 2500    | mg/L         |   |                            | 07/01/19 18:37             | 25      |
| Analyte                      |               | Qualifier | RL         |         | Unit         | D | Prepared                   | Analyzed                   | Dil Fa  |
| Total Volatile Solids        | 21000         |           | 500        |         | mg/L         |   |                            | 06/26/19 19:05             |         |
| Specific Gravity             | 1.1           |           | 0.010      |         | No Unit      |   |                            | 07/10/19 15:25             | -       |
| Total Solids                 | 35000         |           | 500        | 500     | mg/L         |   |                            | 06/26/19 17:46             |         |

# **Client Sample Results**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-244608-1

| Client Sample ID: 0620<br>Date Collected: 06/20/19 06:3<br>Date Received: 06/26/19 10:3 | 33            | WS                     |           |                    |                                       | La | ib Sample      | ID: 440-244<br>Matrix      |        |
|---|---------------|------------------------|-----------|--------------------|---------------------------------------|----|----------------|----------------------------|--------|
| General Chemistry (Contin   |               | 0                      | -         |                    |                                       | _  | <b>_</b> .     |                            |        |
| Analyte   |               | Qualifier              |           |                    | Unit                                  | D  | Prepared       | Analyzed                   | Dil Fa |
| Nitrogen, Total   | 3700          |                        | 0.11      | 0.11               | mg/L                                  |    |                | 07/03/19 14:08             |        |
| Client Sample ID: 0621<br>late Collected: 06/21/19 06:(<br>late Received: 06/26/19 10:3 | 01            |                        |           |                    |                                       | La | b Sample       | ID: 440-244<br>Matrix      |        |
| Method: 8260B - Volatile Or<br>Analyte  |               | unds (GC/<br>Qualifier | MS)<br>RL | MDL                | Unit                                  | D  | Prepared       | Analyzed                   | Dil Fa |
| 1,2-Dichloropropane   | ND            |                        | 2.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| Benzene   | 1.2           |                        | 2.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| Chloroform  | ND            | •                      | 2.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| m,p-Xylene  | ND            |                        | 2.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| Methylene Chloride  | ND            |                        | 5.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| o-Xylene  | ND            |                        | 2.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| Toluene   | 1.1           | J                      | 2.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| Xylenes, Total  | ND            | •                      | 2.0       |                    | ug/L                                  |    |                | 07/01/19 16:23             |        |
| Surrogate   | %Recovery     | Qualifier              | Limits    |                    |                                       |    | Prepared       | Analyzed                   | Dil F  |
| 4-Bromofluorobenzene (Surr)   |               |                        | 80 - 120  |                    |                                       |    |                | 07/01/19 16:23             |        |
| Dibromofluoromethane (Surr)   | 88            |                        | 76 - 132  |                    |                                       |    |                | 07/01/19 16:23             |        |
| Toluene-d8 (Surr)   | 110           |                        | 80 - 128  |                    |                                       |    |                | 07/01/19 16:23             |        |
| Analyte<br>Ethylbenzene   | Result<br>3.4 | Qualifier              |           | <b>MDL</b><br>0.25 | Unit<br>ug/L                          | D  | Prepared       | Analyzed<br>07/02/19 11:58 | Dil F  |
| Surrogate   | %Recovery     | Qualifier              | Limits    |                    |                                       |    | Prepared       | Analyzed                   | Dil F  |
| 4-Bromofluorobenzene (Surr)   | 115           |                        | 80 - 120  |                    |                                       |    |                | 07/02/19 11:58             |        |
| Dibromofluoromethane (Surr)   | 101           |                        | 76 - 132  |                    |                                       |    |                | 07/02/19 11:58             |        |
| Toluene-d8 (Surr)   | 110           |                        | 80 - 128  |                    |                                       |    |                | 07/02/19 11:58             |        |
| Aethod: 625 - Semivolatile  | Organic Com   | oounds (G              | C/MS)     |                    |                                       |    |                |                            |        |
| Analyte   |               | Qualifier              | RL        |                    | Unit                                  | D  | Prepared       | Analyzed                   | Dil F  |
| Bis(2-ethylhexyl) phthalate   | ND            |                        | 410       | 82                 | ug/L                                  |    | 06/27/19 12:00 | 07/01/19 07:25             |        |
| currogate   | %Recovery     |                        | Limits    |                    |                                       |    | Prepared       | Analyzed                   | Dil F  |
| -Fluorobiphenyl   |               | X                      | 50 - 120  |                    |                                       |    | 06/27/19 12:00 | 07/01/19 07:25             |        |
| P-Fluorophenol  | 38            |                        | 30 - 120  |                    |                                       |    |                | 07/01/19 07:25             |        |
| 2,4,6-Tribromophenol  |               | X                      | 40 - 120  |                    |                                       |    |                | 07/01/19 07:25             |        |
| Nitrobenzene-d5   | 63            |                        | 45 - 120  |                    |                                       |    |                | 07/01/19 07:25             |        |
| Terphenyl-d14   |               | X                      | 10 - 150  |                    |                                       |    |                | 07/01/19 07:25             |        |
| Phenol-d6   | 48            |                        | 35 - 120  |                    |                                       |    | 06/27/19 12:00 | 07/01/19 07:25             |        |
| Method: 8315A - Carbonyl (  | •             | HPLC)<br>Qualifier     | RL        | МОІ                | Unit                                  | D  | Prepared       | Analyzed                   | Dil F  |
| Analyte<br>Formaldehyde   | (0.051        |                        | 0.050     | 0.025              |                                       |    | 06/29/19 05:05 | -                          |        |
| -   |               |                        | 0.000     | 0.020              | ing/L                                 |    | 00120118 00.00 | 07/01/18 13.23             |        |
| Iethod: NO3NO2 Calc - Nit   |               | -Nitrite<br>Qualifier  | RL        | וחש                | Unit                                  | D  | Prepared       | Analyzed                   | Dil F  |
| litrate as N  | ND            |                        | 2.2       |                    | mg/L                                  |    |                | 07/01/19 15:00             |        |
|   |               |                        | <u> </u>  | 1.1                | · · · · · · · · · · · · · · · · · · · |    |                |                            |        |
| Nitrite as N  | ND            | н                      | 3.0       |                    | mg/L                                  |    |                | 07/01/19 15:00             |        |

RL

1.0

0.10

0.10

0.50

0.050

0.050

0.10

0.20

0.20

0.10

0.10

0.050

0.20

RL

0.0010

MDL Unit

0.50 mg/L

0.089 mg/L

0.050 mg/L

0.25 mg/L

0.025 mg/L

0.025 mg/L

0.050 mg/L

0.10 mg/L

0.15 mg/L

0.050 mg/L

0.087 mg/L

0.025 mg/L

0.12 mg/L

MDL Unit

0.11 mg/L

0.00050 mg/L

D

D

Prepared

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

#### Client Sample ID: 0621 BUTCHER Date Collected: 06/21/19 06:01 Date Received: 06/26/19 10:30

Method: 7470A - Mercury (CVAA)

Analyte

Aluminum

Arsenic

Cadmium

Chromium

Magnesium

Manganese

Copper

Nickel

Selenium

Titanium

Analyte

Mercury

Analyte HEM

Cyanide, Total Ammonia (as N) Ammonia as NH3

Analvte

**General Chemistry** 

**Total Kjeldahl Nitrogen** Nitrate Nitrite as N **Phosphorus**, Total

**Phenolics, Total Recoverable** 

**Chemical Oxygen Demand** 

**Total Volatile Solids Specific Gravity Total Solids** 

Nitrogen, Total

Zinc

Barium

Boron

Method: 6010B - Metals (ICP) - Total Recoverable

**Result Qualifier** 

ND

0.092 J

ND

ND

0.033 J

ND

28

ND

ND

ND

ND

1.1

0.0027

570

**Result Qualifier** 

.1

0.064

Job ID: 440-244608-1

#### Lab Sample ID: 440-244608-3 Matrix: Water

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

06/26/19 17:58 06/27/19 13:33

07/01/19 16:27 07/02/19 12:30

Analyzed

07/03/19 14:08

Matrix: Water

Lab Sample ID: 440-244608-4

Prepared

Analyzed

Dil Fac

10

10

10

10

10

10

10

10

10

10

10

10

10

Dil Fac

| 5  |  |
|----|--|
| ac |  |
| 1  |  |

| Result | Qualifier | RL    | MDL   | Unit    | D | Prepared       | Analyzed       | Dil Fac |  |
|--------|-----------|-------|-------|---------|---|----------------|----------------|---------|--|
| 633    |           | 25.0  | 7.0   | mg/L    |   | 06/28/19 15:07 | 06/28/19 18:55 | 1       |  |
| 570    |           | 20    | 10    | mg/L    |   | 06/28/19 14:14 | 06/28/19 21:50 | 2       |  |
| ND     |           | 5.0   | 0.31  | mg/L    |   |                | 07/10/19 11:05 | 100     |  |
| 130    |           | 100   | 50    | mg/L    |   | 06/29/19 08:17 | 06/29/19 10:49 | 1       |  |
| 0.087  |           | 0.050 | 0.025 | mg/L    |   | 07/01/19 10:02 | 07/02/19 10:49 | 1       |  |
| ND     |           | 0.025 | 0.013 | mg/L    |   | 06/27/19 14:53 | 06/27/19 20:43 | 1       |  |
| 120    |           | 25    | 5.0   | mg/L    |   | 07/02/19 04:00 | 07/02/19 07:00 | 1       |  |
| 140    |           | 30    | 6.0   | mg/L    |   | 07/02/19 04:00 | 07/02/19 07:00 | 1       |  |
| 11000  |           | 4000  | 2000  | mg/L    |   |                | 07/01/19 18:37 | 200     |  |
| Result | Qualifier | RL    | RL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |  |
| 7700   |           | 200   | 200   | mg/L    |   |                | 06/26/19 19:05 | 1       |  |
| 1.0    |           | 0.010 | 0.010 | No Unit |   |                | 07/10/19 15:24 | 1       |  |
| 11000  |           | 200   | 200   | mg/L    |   |                | 06/26/19 17:46 | 1       |  |

#### Client Sample ID: 0621 OD STREAMS Date Collected: 06/21/19 06:20 Date Received: 06/26/19 10:30

| Method: 826 | 60B - Volatile | Organic Com | nounds ( | GC/MS) |
|-------------|----------------|-------------|----------|--------|
|             |                | organic com | pounds ( |        |

| Analyte             | Result Qualifier | RL | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|---------------------|------------------|----|-----|------|---|----------|----------------|---------|
| 1,2-Dichloropropane | ND               | 20 | 2.5 | ug/L |   |          | 07/01/19 16:51 | 10      |
| Benzene             | ND               | 20 | 2.5 | ug/L |   |          | 07/01/19 16:51 | 10      |
| Chloroform          | ND               | 20 | 2.5 | ug/L |   |          | 07/01/19 16:51 | 10      |
| Ethylbenzene        | ND               | 20 | 2.5 | ug/L |   |          | 07/01/19 16:51 | 10      |
| m,p-Xylene          | ND               | 20 | 5.0 | ug/L |   |          | 07/01/19 16:51 | 10      |
| Methylene Chloride  | ND               | 50 | 11  | ug/L |   |          | 07/01/19 16:51 | 10      |
| o-Xylene            | ND               | 20 | 2.5 | ug/L |   |          | 07/01/19 16:51 | 10      |
| Toluene             | ND               | 20 | 2.5 | ug/L |   |          | 07/01/19 16:51 | 10      |
| Xylenes, Total      | ND               | 20 | 2.5 | ug/L |   |          | 07/01/19 16:51 | 10      |

0.11

Limits

80 - 120

76 - 132

80 - 128

Limits

50 - 120

30 - 120

RL

840

MDL Unit

170 ug/L

Surrogate

Analyte

Surrogate

2-Fluorobiphenyl

2-Fluorophenol

Toluene-d8 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

Bis(2-ethylhexyl) phthalate

# Client Sample ID: 0621 OD STREAMS Date Collected: 06/21/19 06:20 Date Received: 06/26/19 10:30

Method: 625 - Semivolatile Organic Compounds (GC/MS)

%Recovery Qualifier

91

93

104

ND

%Recovery Qualifier

0  $\overline{X}$ 

0 X

Result Qualifier

#### Lab Sample ID: 440-244608-4 Matrix: Water

Analyzed

07/01/19 16:51

07/01/19 16:51

07/01/19 16:51

Analyzed

Analyzed

06/27/19 12:00 07/01/19 07:49

06/27/19 12:00 07/01/19 07:49

06/27/19 12:00 07/01/19 07:49

Prepared

Prepared

Prepared

D

# 5

Dil Fac

Dil Fac

Dil Fac

10

10

10

20

20

20

| 2 1 1001001101  | 0            | ~          | 00 - 720 |         |        |   | 00/21/10 12.00 | 01/01/10 01.40        | 20      |
|---|--------------|------------|----------|---------|--------|---|----------------|-----------------------|---------|
| 2,4,6-Tribromophenol  | 0            | X          | 40 - 120 |         |        |   | 06/27/19 12:00 | 07/01/19 07:49        | 20      |
| Nitrobenzene-d5   | 33           | X          | 45 - 120 |         |        |   | 06/27/19 12:00 | 07/01/19 07:49        | 20      |
| Terphenyl-d14   | 0            | X          | 10_150   |         |        |   | 06/27/19 12:00 | 07/01/19 07:49        | 20      |
| Phenol-d6   | 0            | X          | 35 - 120 |         |        |   | 06/27/19 12:00 | 07/01/19 07:49        | 20      |
|   |              |            |          |         |        |   |                |                       |         |
| Method: 8315A - Carbonyl Co   | •            |            | -        |         | 11     | - | D              | • · · · • · · · · · · | D'I 5   |
| Analyte   |              | Qualifier  | RL       |         | Unit   | D | Prepared       | Analyzed              | Dil Fac |
| Formaldehyde  | 0.069        | н          | 0.050    | 0.025   | mg/L   |   | 06/29/19 05:05 | 07/01/19 13:44        | 1       |
| Method: NO3NO2 Calc - Nitro   | gen. Nitrate | -Nitrite   |          |         |        |   |                |                       |         |
| Analyte   |              | Qualifier  | RL       | MDL     | Unit   | D | Prepared       | Analyzed              | Dil Fac |
| Nitrate as N  | ND           | H          | 11       | 5.5     | mg/L   |   |                | 07/01/19 15:00        | 1       |
| Nitrite as N  | ND           | н          | 15       | 2.5     | mg/L   |   |                | 07/01/19 15:00        | 1       |
| Nitrate Nitrite as N  | ND           | н          | 15       | 5.5     | mg/L   |   |                | 07/01/19 15:00        | 1       |
| _   |              |            |          |         |        |   |                |                       |         |
| Method: 6010B - Metals (ICP)  |              |            |          |         |        |   |                |                       |         |
| Analyte   |              | Qualifier  | RL       |         | Unit   | D | Prepared       | Analyzed              | Dil Fac |
| Aluminum  | 550          |            | 0.50     |         | mg/L   |   | 07/05/19 09:49 |                       | 5       |
| Arsenic   | 0.74         |            | 0.050    |         | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Barium  | 0.14         |            | 0.050    |         | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Boron   | 0.71         |            | 0.25     |         | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Cadmium   | 0.17         |            | 0.025    | 0.013   | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Chromium  | 0.19         |            | 0.025    |         | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Copper  | 0.42         |            | 0.050    |         | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Magnesium   | 180          |            | 0.10     | 0.050   | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Manganese   | 0.14         |            | 0.10     | 0.075   | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Nickel  | 0.062        |            | 0.050    | 0.025   | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Selenium  | 0.42         |            | 0.050    | 0.044   | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Titanium  | 0.45         |            | 0.025    | 0.013   | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
| Zinc  | 29           |            | 0.10     | 0.060   | mg/L   |   | 07/05/19 09:49 | 07/05/19 19:59        | 5       |
|   |              |            |          |         |        |   |                |                       |         |
| Method: 7470A - Mercury (CV<br>Analyte  |              | Qualifier  | RL       | мы      | Unit   | D | Prepared       | Analyzed              | Dil Fac |
| <del>_</del>  | 0.0044       | Quaimer    | 0.0010   | 0.00050 |        |   | 07/01/19 16:27 | 07/02/19 12:32        | 5       |
| Mercury   | 0.0044       |            | 0.0010   | 0.00050 | iiig/L |   | 07/01/19 10.27 | 01/02/19 12.32        | 5       |
| General Chemistry   |              |            |          |         |        |   |                |                       |         |
| A second a s | <b>D</b>     | Overlifter |          | MP      | 11     | - | Due a sus d'   | Amelianad             | D11 E   |

| General Chemistry<br>Analyte | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------------------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| HEM                          | 7090   |           | 50.0 | 14.0 | mg/L |   | 06/28/19 15:07 | 06/28/19 18:55 | 1       |
| Total Kjeldahl Nitrogen      | 4000   |           | 100  | 50   | mg/L |   | 06/28/19 14:14 | 06/28/19 21:50 | 10      |
| Nitrate Nitrite as N         | ND     |           | 5.0  | 0.31 | mg/L |   |                | 07/10/19 11:09 | 100     |
| Phosphorus, Total            | 980    |           | 100  | 50   | mg/L |   | 06/29/19 08:17 | 06/29/19 10:50 | 1       |

# **Client Sample ID: 0621 OD STREAMS** Date Collected: 06/21/19 06:20 Date Received: 06/26/19 10:30

| General Chemistry (Continued | 1)     |           |       |       |         |   |                |                |         |
|------------------------------|--------|-----------|-------|-------|---------|---|----------------|----------------|---------|
| Analyte                      |        | Qualifier | RL    | MDL   | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Phenolics, Total Recoverable | 11     |           | 2.5   | 1.3   | mg/L    |   | 07/01/19 10:02 | 07/02/19 10:54 | 50      |
| Cyanide, Total               | 0.037  |           | 0.025 | 0.013 | mg/L    |   | 06/27/19 14:53 | 06/27/19 20:43 | 1       |
| Ammonia (as N)               | 2200   |           | 250   | 50    | mg/L    |   | 07/02/19 04:00 | 07/02/19 07:00 | 1       |
| Ammonia as NH3               | 2600   |           | 300   | 60    | mg/L    |   | 07/02/19 04:00 | 07/02/19 07:00 | 1       |
| Chemical Oxygen Demand       | 65000  |           | 4000  | 2000  | mg/L    |   |                | 07/01/19 18:37 | 200     |
| Analyte                      | Result | Qualifier | RL    | RL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Total Volatile Solids        | 16000  |           | 500   | 500   | mg/L    |   |                | 06/26/19 19:05 | 1       |
| Specific Gravity             | 1.1    |           | 0.010 | 0.010 | No Unit |   |                | 07/10/19 15:22 | 1       |
| Total Solids                 | 31000  |           | 500   | 500   | mg/L    |   |                | 06/26/19 17:46 | 1       |
| Nitrogen, Total              | 4000   |           | 0.11  | 0.11  | mg/L    |   |                | 07/03/19 14:08 | 1       |

# Lab Sample ID: 440-244608-4 Matrix: Water

5

# **Method Summary**

#### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

|          |                  | 1  |
|----------|------------------|----|
| Job      | ID: 440-244608-1 | 2  |
| rotocol  | Laboratory       | 3  |
| W846     | TAL IRV          |    |
| 0CFR136A | TAL IRV          | 4  |
| W846     | TAL IRV          |    |
| PA       | TAL IRV          | 5  |
| W846     | TAL IRV          |    |
| W846     | TAL IRV          | 6  |
| 664A     | TAL IRV          |    |
| М        | TAL IRV          | 7  |
| ICAWW    | TAL IRV          |    |
| ICAWW    | TAL SAC          | 8  |
| PA       | TAL IRV          |    |
| ICAWW    | TAL SAV          | 9  |
| STM      | TAL PIT          |    |
| М        | TAL IRV          | 10 |
| М        | TAL IRV          |    |
| M        | TAL IRV          | 44 |
| М        | TAL IRV          |    |
| PA       | TAL IRV          | 12 |
| 664A     | TAL IRV          |    |
|          |                  |    |

| 1 | 3 |
|---|---|
|   |   |
|   |   |

| Method          | Method Description                                 | Protocol  | Laboratory |
|-----------------|--|-----------|------------|
| 8260B           | Volatile Organic Compounds (GC/MS)                 | SW846     | TAL IRV    |
| 625             | Semivolatile Organic Compounds (GC/MS)             | 40CFR136A | TAL IRV    |
| 8315A           | Carbonyl Compounds (HPLC)                          | SW846     | TAL IRV    |
| NO3NO2 Calc     | Nitrogen, Nitrate-Nitrite                          | EPA       | TAL IRV    |
| 6010B           | Metals (ICP)                                       | SW846     | TAL IRV    |
| 7470A           | Mercury (CVAA)                                     | SW846     | TAL IRV    |
| 1664A           | HEM and SGT-HEM                                    | 1664A     | TAL IRV    |
| 2540E           | Solids, Volatile and Fixed (VS)                    | SM        | TAL IRV    |
| 351.2           | Nitrogen, Total Kjeldahl                           | MCAWW     | TAL IRV    |
| 353.2           | Nitrogen, Nitrate-Nitrite                          | MCAWW     | TAL SAC    |
| 365.3           | Phosphorus, Total                                  | EPA       | TAL IRV    |
| 420.1           | Phenolics, Total Recoverable                       | MCAWW     | TAL SAV    |
| ASTM D5057-90   | Specific Gravity and Bulk Density (Screening)      | ASTM      | TAL PIT    |
| SM 2540B        | Solids, Total                                      | SM        | TAL IRV    |
| SM 4500 CN E    | Cyanide, Total                                     | SM        | TAL IRV    |
| SM 4500 NH3 D   | Ammonia  | SM        | TAL IRV    |
| SM 5220D        | COD  | SM        | TAL IRV    |
| Total Nitrogen  | Nitrogen, Total                                    | EPA       | TAL IRV    |
| 1664A           | HEM and SGT-HEM (Aqueous)                          | 1664A     | TAL IRV    |
| 3005A           | Preparation, Total Recoverable or Dissolved Metals | SW846     | TAL IRV    |
| 351.2           | Nitrogen, Total Kjeldahl                           | MCAWW     | TAL IRV    |
| 365.2/365.3/365 | Phosphorus, Total                                  | MCAWW     | TAL IRV    |
| 5030B           | Purge and Trap                                     | SW846     | TAL IRV    |
| 625             | Liquid-Liquid Extraction                           | 40CFR136A | TAL IRV    |
| 7470A           | Preparation, Mercury                               | SW846     | TAL IRV    |
| 8315_W_Prep     | Liquid-Liquid Extraction (Carbonyl Compounds)      | SW846     | TAL IRV    |
| Distill/CN      | Distillation, Cyanide                              | None      | TAL IRV    |
| Distill/Phenol  | Distillation, Phenolics                            | None      | TAL SAV    |
| SM 4500 NH3 B   | Distillation, Ammonia                              | SM        | TAL IRV    |

#### **Protocol References:**

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

ASTM = ASTM International

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions. None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

# Client Sample ID: 0620 BUTCHER Date Collected: 06/20/19 06:11 Date Received: 06/26/19 10:30

# Lab Sample ID: 440-244608-1 Matrix: Water

| Prop Type<br>Total/NAType<br>AnalysisMethod<br>Bub<br>B200BRun<<br>Factor<br>B200BFactor<br>100mLAmount<br>10mLNumber<br>555721or Analyzed<br>Or10/191030Analysis<br>TAL IRVTotal/NAPrep<br>Analysis6251005 mL4.0 mL55572106/27/19120HCK<br>TAL IRVTotal/NAPrep<br>Analysis8315.W_Prep520 mL1 mL55534007/01/19 07:00PIRTAL IRVTotal/NAAnalysis815.W_Prep20 mL1 mL55554206/29/19 05:05FDTAL IRVTotal/NAAnalysisN30NQ2 Calc1555562807/01/19 15:00NUTAL IRVTotal RecoverablePrep3005A25 mL25 mL55648806/26/19 17:58FWTAL IRVTotal RecoverablePrep7470A520 mL55564207/01/19 16:27DBTAL IRVTotal/NAAnalysis7470A520 mL55583407/02/19 12:82DBTAL IRVTotal/NAAnalysis7470A520 mL55584206/26/19 17:58JHTAL IRVTotal/NAAnalysis1664A15mL5558206/26/19 19:55JHTAL IRVTotal/NAAnalysis351.2500.5528706/26/19 19:55JHTAL IRVTotal/NAAnalysis351.25506/26/19 19:55JHTAL IRVTotal/NAAnalysis351.25506/26/19 10:59JLTAL IRV<  | Γ                 | Batch    | Batch           |     | Dil    | Initial  | Final   | Batch  | Prepared       |         |         |
|--|-------------------|----------|-----------------|-----|--------|----------|---------|--------|----------------|---------|---------|
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$  | Prep Type         | Туре     | Method          | Run | Factor | Amount   | Amount  | Number | or Analyzed    | Analyst | Lab     |
| Total/NA         Analysis         625         5         555490         07/01/19 07.00 P1R         TAL IRV           Total/NA         Analysis         8315_W_Prep         20 mL         1 mL         55542         06/29/19 05.05         FTD         TAL IRV           Total/NA         Analysis         NO3NO2 Calc         1         55562         07/01/19 12.41         D1D         TAL IRV           Total/NA         Analysis         NO3NO2 Calc         1         55562         06/29/19 15.07         NN         TAL IRV           Total Recoverable         Analysis         00108         25 mL         26 d883         06/26/19 17.58         BV         TAL IRV           Total/NA         Prep         3005A         25 mL         20 mL         55562         06/28/19 15.07         AJH         TAL IRV           Total/NA         Prep         1470A         20 mL         20 mL         55582         06/28/19 15.07         AJH         TAL IRV           Total/NA         Prep         1664A         20 mL         55525         06/28/19 15.07         AJH         TAL IRV           Total/NA         Analysis         351.2         5<  | Total/NA          | Analysis | 8260B           |     | 1      | 10 mL    | 10 mL   | 555721 | 07/02/19 11:30 | DCI     | TAL IRV |
| Total/NA         Prep         8315_W_Prep         20 mL         1 mL         55343         06/29/19 05:05         FTD         TAL IRV           Total/NA         Analysis         8315_A         1         55542         07/01/19 12:41         D1D         TAL IRV           Total/NA         Analysis         N03NO2 Calc         1         555628         07/01/19 15:00         NN         TAL IRV           Total Recoverable         Prep         3005A         25 mL         25 mL         55483         06/28/19 07:58         BV         TAL IRV           Total Recoverable         Analysis         6010B         10         555654         07/01/19 16:27         DB         TAL IRV           Total/NA         Prep         1664A         200 mL         20 mL         555847         07/02/19 12:25         DB         TAL IRV           Total/NA         Analysis         1664A         200 mL         1000 mL         555825         06/28/19 15:07         AJH         TAL IRV           Total/NA         Analysis         1664A         1         100 mL         555825         06/28/19 14:55         AJH         TAL IRV           Total/NA         Analysis         351.2         0.5 mL         5mL         555826         06/28/19 19   | Total/NA          | Prep     | 625             |     |        | 1005 mL  | 4.0 mL  | 555027 | 06/27/19 12:00 | HCK     | TAL IRV |
| Total/NA         Analysis         8315A         1         555542         07/01/19 12:41         D1D         TAL IRV           Total/NA         Analysis         NO3NO2 Calc         1         555628         07/01/19 15:00         NN         TAL IRV           Total Recoverable         Prep         3005A         25 mL         25 mL         556828         06/26/19 17:58         BV         TAL IRV           Total Recoverable         Analysis         6010B         10         555654         07/01/19 16:27         DB         TAL IRV           Total/NA         Prep         7470A         20 mL         20 mL         555844         07/02/19 12:25         DB         TAL IRV           Total/NA         Prep         1664A         200 mL         1000 mL         55525         06/28/19 15:07         AJH         TAL IRV           Total/NA         Analysis         1664A         1         1000 mL         55525         06/28/19 19:05         HTL         TAL IRV           Total/NA         Analysis         351.2         0.5 mL         100 mL         558267         06/28/19 19:05         HTL         TAL IRV           Total/NA         Analysis         353.2         100         555362         06/28/19 10:05         TAL IR   | Total/NA          | Analysis | 625             |     | 5      |          |         | 555490 | 07/01/19 07:00 | P1R     | TAL IRV |
| Total/NA         Analysis         NO3NO2 Calc         1         555628         07/01/19 15:00         NN         TAL IRV           Total Recoverable         Prep         3005A         25 mL         25 mL         554883         06/26/19 17:58         BV         TAL IRV           Total Recoverable         Analysis         6010B         10         555055         06/27/19 13:29         TQN         TAL IRV           Total/NA         Prep         7470A         5         07         55583         07/02/19 12:25         DB         TAL IRV           Total/NA         Prep         1664A         200 mL         1000 mL         555282         06/28/19 15:07         AJH         TAL IRV           Total/NA         Prep         1664A         1         555282         06/28/19 16:05         AJH         TAL IRV           Total/NA         Analysis         351.2         5         5         06/28/19 14:14         TAL IRV           Total/NA         Analysis         351.2         5         0.5 mL         55562         06/28/19 14:14         TAL IRV           Total/NA         Analysis         351.2         5         0.5 mL         55562         06/29/19 04:17         MMP         TAL IRV           Total/N  | Total/NA          | Prep     | 8315_W_Prep     |     |        | 20 mL    | 1 mL    | 555345 | 06/29/19 05:05 | FTD     | TAL IRV |
| Total Recoverable<br>Total Recoverable<br>Total RecoverablePrep<br>Analysis3005A<br>6010B $25 \text{ mL}$ $25 \text{ mL}$ $554833$<br>$555055$ $06/27/19 13.29$<br>$06/27/19 13.29$ TAL IRV<br>TAL IRV<br>TAL IRV<br>TAL IRVTotal/NAPrep7470A $20 \text{ mL}$ $20 \text{ mL}$ $20 \text{ mL}$ $555647$ $07/01/19 16.27$<br>$06/27/19 12.25$ DBTAL IRV<br>TAL IRVTotal/NAPrep1664A $200 \text{ mL}$ $1000 \text{ mL}$ $55528$ $06/28/19 15.07$ AJHTAL IRV<br>TAL IRVTotal/NAPrep1664A $200 \text{ mL}$ $1000 \text{ mL}$ $555287$ $06/28/19 18.05$ AJHTAL IRVTotal/NAAnalysis2540E1 $5 \text{ mL}$ $100 \text{ mL}$ $55488$ $06/28/19 19.05$ HTLTAL IRVTotal/NAAnalysis $351.2$ $5$ $0.5 \text{ mL}$ $25 \text{ mL}$ $555602$ $06/28/19 14.14$ HTLTAL IRVTotal/NAAnalysis $353.2$ $100$ $5 \text{ mL}$ $555602$ $06/28/19 12.47$ HTLTAL IRVTotal/NAPrep $365.2/365.3/365$ $0.050 \text{ mL}$ $50 \text{ mL}$ $55562$ $06/28/19 10.47$ MMPTAL IRVTotal/NAPrepDistil/Phenol $6 \text{ mL}$ $6 \text{ mL}$ $57647$ $07/01/19 10.57$ TCSTAL SAVTotal/NAPrepDistil/Phenol $6 \text{ mL}$ $6 \text{ mL}$ $57647$ $07/01/19 10.57$ TAMTAL IRVTotal/NAAnalysisAM D5057-901 $50 \text{ mL}$ $557647$ $06/29/19 10.49$ MMPTAL   | Total/NA          | Analysis | 8315A           |     | 1      |          |         | 555542 | 07/01/19 12:41 | D1D     | TAL IRV |
| Total Recoverable         Analysis         6010B         10         555055         06/27/19 13:29         TQN         TAL IRV           Total/NA         Prep         7470A         5         20 mL         20 mL         555647         07/01/19 16:27         DB         TAL IRV           Total/NA         Analysis         7470A         5         20 mL         20 mL         555843         07/02/19 12:25         DB         TAL IRV           Total/NA         Prep         1664A         1         1000 mL         55525         06/28/19 15:07         AJH         TAL IRV           Total/NA         Analysis         1664A         1         5mL         1000 mL         55582         06/28/19 19:05         HTL         TAL IRV           Total/NA         Analysis         351.2         0.5 mL         25 mL         55567         06/28/19 19:15         HTL         TAL IRV           Total/NA         Analysis         351.2         5         0.5 mL         25 mL         55567         06/28/19 11:14         HTL         TAL IRV           Total/NA         Analysis         351.2         5         0.5 mL         555862         06/28/19 11:07         TAU         TAL IRV           Total/NA         Analysis   | Total/NA          | Analysis | NO3NO2 Calc     |     | 1      |          |         | 555628 | 07/01/19 15:00 | NN      | TAL IRV |
| Total/NA<br>Total/NA         Prep<br>Analysis         7470A         20 mL         20 mL         55567         07/01/19 16:27 DB         TAL IRV<br>TAL IRV           Total/NA         Prep         1664A         200 mL         1000 mL         555282         06/28/19 15:07 AJH         TAL IRV           Total/NA         Analysis         1664A         1         555325         06/28/19 18:55 AJH         TAL IRV           Total/NA         Analysis         2540E         1         5 mL         100 mL         55282         06/28/19 19:05 HTL         TAL IRV           Total/NA         Analysis         2540E         1         5 mL         100 mL         55282         06/28/19 19:05 HTL         TAL IRV           Total/NA         Analysis         351.2         5         5         05         06/28/19 14:14 HTL         TAL IRV           Total/NA         Analysis         353.2         100         308826         07/10/19 10:57 TCS         TAL IRV           Total/NA         Prep         365.3         1         555842         06/29/19 00:41         MMP         TAL IRV           Total/NA         Analysis         420.1         1         6 mL         6 mL         555842         06/29/19 10:49         MVF         TAL IRV  | Total Recoverable | Prep     | 3005A           |     |        | 25 mL    | 25 mL   | 554883 | 06/26/19 17:58 | BV      | TAL IRV |
| Total/NA         Analysis         7470A         5         55834         07/02/19 12:25         DB         TAL IRV           Total/NA         Prep         1664A         200 mL         1000 mL         555282         06/28/19 15:07         AJH         TAL IRV           Total/NA         Analysis         1664A         1         5mL         0.00 mL         555325         06/28/19 18:55         AJH         TAL IRV           Total/NA         Analysis         2540E         1         5mL         100 mL         555267         06/28/19 18:55         AJH         TAL IRV           Total/NA         Analysis         351.2         0.5 mL         25 mL         555602         06/28/19 14:14         HTL         TAL IRV           Total/NA         Analysis         353.2         100         306826         07/10/19 10:57         TCS         TAL IRV           Total/NA         Prep         365.2/365.3/365         0.050 mL         50 mL         55584         06/29/19 08:17         MMP         TAL IRV           Total/NA         Analysis         365.3         1         6mL         6mL         576470         07/01/19 10:20         NVF         TAL IRV           Total/NA         Analysis         ASTM D5057-90 <t< td=""><td>Total Recoverable</td><td>Analysis</td><td>6010B</td><td></td><td>10</td><td></td><td></td><td>555055</td><td>06/27/19 13:29</td><td>TQN</td><td>TAL IRV</td></t<>                                | Total Recoverable | Analysis | 6010B           |     | 10     |          |         | 555055 | 06/27/19 13:29 | TQN     | TAL IRV |
| Total/NA         Prep         1664A         200 mL         1000 mL         55528         06/28/19 15:57         AJH         TAL IRV           Total/NA         Analysis         1664A         1         5mL         100 mL         555325         06/28/19 15:57         AJH         TAL IRV           Total/NA         Analysis         2540E         1         5mL         100 mL         55484         06/26/19 19:05         HTL         TAL IRV           Total/NA         Prep         351.2         0.5 mL         25 mL         555267         06/28/19 14:14         HTL         TAL IRV           Total/NA         Analysis         351.2         5         0.5 mL         25 mL         555602         06/28/19 21:47         HTL         TAL IRV           Total/NA         Analysis         353.2         100         306826         07/10/19 10:57         TCS         TAL IRV           Total/NA         Prep         365.2/365.3/365         0.050 mL         50 mL         555362         06/29/19 08:17         MMP         TAL IRV           Total/NA         Analysis         365.3         1         6 mL         6 mL         576870         07/01/19 10:02         NVF         TAL SAV           Total/NA         Analysis </td <td>Total/NA</td> <td>Prep</td> <td>7470A</td> <td></td> <td></td> <td>20 mL</td> <td>20 mL</td> <td>555647</td> <td>07/01/19 16:27</td> <td>DB</td> <td>TAL IRV</td>                                 | Total/NA          | Prep     | 7470A           |     |        | 20 mL    | 20 mL   | 555647 | 07/01/19 16:27 | DB      | TAL IRV |
| Total/NA         Analysis         1664A         1         555325         06/28/19 18:55         AJH         TAL IRV           Total/NA         Analysis         2540E         1         5 mL         100 mL         55484         06/26/19 19:05         HTL         TAL IRV           Total/NA         Prep         351.2         0.5 mL         25 mL         555267         06/28/19 14:14         HTL         TAL IRV           Total/NA         Analysis         351.2         5         0.5 mL         25 mL         555602         06/28/19 14:14         HTL         TAL IRV           Total/NA         Analysis         353.2         100         306826         07/10/19 10:57         TCS         TAL SAC           Total/NA         Prep         365.3/365         0.050 mL         50 mL         555362         06/29/19 10:49         MMP         TAL IRV           Total/NA         Analysis         365.3         1         6 mL         6 mL         576470         07/01/19 10:02         NVF         TAL SAV           Total/NA         Analysis         ASTM D5057-90         1         6 mL         6 mL         576857         07/02/19 10:49         NVF         TAL SAV           Total/NA         Analysis         SM 2540  | Total/NA          | Analysis | 7470A           |     | 5      |          |         | 555834 | 07/02/19 12:25 | DB      | TAL IRV |
| Total/NA         Analysis         2540E         1         5 mL         100 mL         554894         06/26/19 19:05         HTL         TAL IRV           Total/NA         Prep         351.2         0.5 mL         25 mL         555267         06/28/19 14:14         HTL         TAL IRV           Total/NA         Analysis         351.2         5         0         25 mL         555602         06/28/19 21:47         HTL         TAL IRV           Total/NA         Analysis         353.2         100         306826         07/10/19 10:57         TCS         TAL IRV           Total/NA         Analysis         365.2/365.3/365         0.050 mL         50 mL         55584         06/29/19 0.817         MMP         TAL IRV           Total/NA         Prep         365.2/365.3/365         0.050 mL         50 mL         55584         06/29/19 0.817         MMP         TAL IRV           Total/NA         Analysis         365.3         1         6 mL         6 mL         576470         07/01/19 10:02         NVF         TAL SAV           Total/NA         Analysis         ASTM D5057-90         1         6 mL         6 mL         576857         07/02/19 0.49         NVF         TAL SAV           Total/NA   | Total/NA          | Prep     | 1664A           |     |        | 200 mL   | 1000 mL | 555282 | 06/28/19 15:07 | AJH     | TAL IRV |
| Total/NA         Prep         351.2         0.5 mL         25 mL         555267         06/28/19 14:14         HTL         TAL IRV           Total/NA         Analysis         351.2         5         0         555602         06/28/19 21:47         HTL         TAL IRV           Total/NA         Analysis         353.2         100         306826         07/10/19 10:57         TCS         TAL SAC           Total/NA         Prep         365.2/365         0.050 mL         50 mL         555362         06/29/19 08:17         MMP         TAL IRV           Total/NA         Prep         365.3         1         5         555384         06/29/19 10:49         MMP         TAL IRV           Total/NA         Prep         Distill/Phenol         6 mL         6 mL         576470         07/01/19 10:02         NVF         TAL SAV           Total/NA         Analysis         420.1         1         6 mL         6 mL         576857         07/02/19 10:49         NVF         TAL SAV           Total/NA         Analysis         ASTM D5057-90         1         50 g         50 mL         576857         07/02/19 10:49         NVF         TAL IRV           Total/NA         Analysis         SM 2540B         1   | Total/NA          | Analysis | 1664A           |     | 1      |          |         | 555325 | 06/28/19 18:55 | AJH     | TAL IRV |
| Total/NA         Analysis         351.2         5         55602         06/28/19 21:47         HTL         TAL IRV           Total/NA         Analysis         353.2         100         306826         07/10/19 10:57         TCS         TAL SAC           Total/NA         Prep         365.2/365.3/365         0.050 mL         50 mL         555362         06/29/19 08:17         MMP         TAL IRV           Total/NA         Analysis         365.3         1         555384         06/29/19 10:49         MMP         TAL IRV           Total/NA         Analysis         365.3         1         6 mL         6 mL         576470         07/01/19 10:02         NVF         TAL SAV           Total/NA         Analysis         420.1         1         6 mL         6 mL         576857         07/02/19 10:49         NVF         TAL SAV           Total/NA         Analysis         ASTM D5057-90         1         50 g         50 mL         284432         07/10/19 15:27         TAM         TAL IRV           Total/NA         Analysis         SM 2540B         1         5 mL         100 mL         555847         06/26/19 17:46         HTL         TAL IRV           Total/NA         Analysis         SM 4500 CN E   | Total/NA          | Analysis | 2540E           |     | 1      | 5 mL     | 100 mL  | 554894 | 06/26/19 19:05 | HTL     | TAL IRV |
| Total/NA         Analysis         353.2         100         306826         07/10/19 10:57         TCS         TAL SAC           Total/NA         Prep         365.2/365.3/365         0.050 mL         50 mL         555362         06/29/19 08:17         MMP         TAL SAC           Total/NA         Analysis         365.3         1         555384         06/29/19 08:17         MMP         TAL IRV           Total/NA         Prep         Distill/Phenol         6 mL         6 mL         576470         07/01/19 10:20         NVF         TAL SAV           Total/NA         Analysis         420.1         1         6 mL         6 mL         576857         07/02/19 10:49         NVF         TAL SAV           Total/NA         Analysis         ASTM D5057-90         1         50 g         50 mL         284432         07/10/19 15:27         TAM         TAL PIT           Total/NA         Analysis         SM 2540B         1         5mL         100 mL         554877         06/26/19 17:46         HTL         TAL IRV           Total/NA         Prep         Distil/CN         50 mL         50 mL         55514         06/27/19 14:53         QTN         TAL IRV           Total/NA         Analysis         SM 4500 NH3  | Total/NA          | Prep     | 351.2           |     |        | 0.5 mL   | 25 mL   | 555267 | 06/28/19 14:14 | HTL     | TAL IRV |
| Total/NA         Prep         365.2/365.3/365         0.050 mL         50 mL         555362         06/29/19 08:17 MMP         TAL IRV           Total/NA         Analysis         365.3         1         555384         06/29/19 10:49 MMP         TAL IRV           Total/NA         Prep         Distill/Phenol         6 mL         6 mL         576470         07/01/19 10:02 NVF         TAL IRV           Total/NA         Analysis         420.1         1         6 mL         6 mL         576857         07/02/19 10:49 NVF         TAL SAV           Total/NA         Analysis         ASTM D5057-90         1         50 g         50 mL         284432         07/10/19 15:27 TAM         TAL IRV           Total/NA         Analysis         SM 2540B         1         5 mL         100 mL         554877         06/26/19 17:46 HTL         TAL IRV           Total/NA         Prep         Distil/CN         50 mL         50 mL         555144         06/27/19 14:53 QTN         TAL IRV           Total/NA         Prep         Distil/CN         50 mL         50 mL         555144         06/27/19 14:53 QTN         TAL IRV           Total/NA         Analysis         SM 4500 NH3 B         2.0 mL         50 mL         555710         07/02/19 04:00 YZ </td <td>Total/NA</td> <td>Analysis</td> <td>351.2</td> <td></td> <td>5</td> <td></td> <td></td> <td>555602</td> <td>06/28/19 21:47</td> <td>HTL</td> <td>TAL IRV</td> | Total/NA          | Analysis | 351.2           |     | 5      |          |         | 555602 | 06/28/19 21:47 | HTL     | TAL IRV |
| Total/NA       Analysis       365.3       1       555384       06/29/19 10:49       MMP       TAL IRV         Total/NA       Prep       Distill/Phenol       6 mL       6 mL       6 mL       576470       07/01/19 10:02       NVF       TAL IRV         Total/NA       Analysis       420.1       1       6 mL       6 mL       6 mL       576857       07/02/19 10:49       NVF       TAL SAV         Total/NA       Analysis       ASTM D5057-90       1       50 g       50 mL       284432       07/10/19 15:27       TAM       TAL IRV         Total/NA       Analysis       SM 2540B       1       5 mL       100 mL       554877       06/26/19 17:46       HTL       TAL IRV         Total/NA       Prep       Distill/CN       50 mL       50 mL       555064       06/27/19 14:53       QTN       TAL IRV         Total/NA       Prep       Distill/CN       50 mL       50 mL       555114       06/27/19 20:43       QTN       TAL IRV         Total/NA       Analysis       SM 4500 CN E       1       2.0 mL       50 mL       555710       07/02/19 04:00       YZ       TAL IRV         Total/NA       Analysis       SM 4500 NH3 B       2.0 mL       50 mL   | Total/NA          | Analysis | 353.2           |     | 100    |          |         | 306826 | 07/10/19 10:57 | TCS     | TAL SAC |
| Total/NAPrepDistill/Phenol6 mL6 mL57647007/01/19 10:02NVFTAL SAVTotal/NAAnalysis420.116 mL6 mL57685707/02/19 10:49NVFTAL SAVTotal/NAAnalysisASTM D5057-90150 g50 mL28443207/10/19 15:27TAMTAL PITTotal/NAAnalysisSM 2540B15 mL100 mL55487706/26/19 17:46HTLTAL IRVTotal/NAPrepDistill/CN50 mL50 mL55506406/27/19 14:53QTNTAL IRVTotal/NAAnalysisSM 4500 CN E1-50 mL55511406/27/19 20:43QTNTAL IRVTotal/NAPrepSM 4500 NH3 B2.0 mL50 mL55571007/02/19 04:00YZTAL IRVTotal/NAAnalysisSM 4500 NH3 D1-55573507/02/19 07:00YZTAL IRVTotal/NAAnalysisSM 520D502.5 mL2.5 mL55568107/01/19 18:37KYPTAL IRV  | Total/NA          | Prep     | 365.2/365.3/365 |     |        | 0.050 mL | 50 mL   | 555362 | 06/29/19 08:17 | MMP     | TAL IRV |
| Total/NAAnalysis420.116 mL6 mL57685707/02/19 10:49 NVFTAL SAVTotal/NAAnalysisASTM D5057-90150 g50 mL28443207/10/19 15:27 TAMTAL PITTotal/NAAnalysisSM 2540B15 mL100 mL55487706/26/19 17:46 HTLTAL IRVTotal/NAPrepDistill/CN50 mL50 mL55506406/27/19 14:53 QTNTAL IRVTotal/NAAnalysisSM 4500 CN E1-55511406/27/19 20:43 QTNTAL IRVTotal/NAPrepSM 4500 NH3 B2.0 mL50 mL55571007/02/19 04:00 YZTAL IRVTotal/NAAnalysisSM 4500 NH3 D1-55573507/02/19 07:00 YZTAL IRVTotal/NAAnalysisSM 520D502.5 mL2.5 mL55568107/01/19 18:37 KYPTAL IRV   | Total/NA          | Analysis | 365.3           |     | 1      |          |         | 555384 | 06/29/19 10:49 | MMP     | TAL IRV |
| Total/NA       Analysis       ASTM D5057-90       1       50 g       50 mL       284432       07/10/19 15:27       TAM       TAL PIT         Total/NA       Analysis       SM 2540B       1       5 mL       100 mL       554877       06/26/19 17:46       HTL       TAL IRV         Total/NA       Prep       Distil/CN       50 mL       50 mL       555064       06/27/19 14:53       QTN       TAL IRV         Total/NA       Analysis       SM 4500 CN E       1       -       50 mL       555114       06/27/19 20:43       QTN       TAL IRV         Total/NA       Prep       SM 4500 NH3 B       2.0 mL       50 mL       555710       07/02/19 04:00       YZ       TAL IRV         Total/NA       Analysis       SM 4500 NH3 D       1       -       555735       07/02/19 07:00       YZ       TAL IRV         Total/NA       Analysis       SM 520D       50       2.5 mL       2.5 mL       555681       07/01/19 18:37       KYP       TAL IRV         Total/NA       Analysis       SM 5220D       50       2.5 mL       2.5 mL       555681       07/01/19 18:37       KYP       TAL IRV   | Total/NA          | Prep     | Distill/Phenol  |     |        | 6 mL     | 6 mL    | 576470 | 07/01/19 10:02 | NVF     | TAL SAV |
| Total/NA       Analysis       SM 2540B       1       5 mL       100 mL       554877       06/26/19 17:46       HTL       TAL IRV         Total/NA       Prep       Distill/CN       50 mL       50 mL       555064       06/27/19 14:53       QTN       TAL IRV         Total/NA       Analysis       SM 4500 CN E       1   | Total/NA          | Analysis | 420.1           |     | 1      | 6 mL     | 6 mL    | 576857 | 07/02/19 10:49 | NVF     | TAL SAV |
| Total/NA         Prep         Distill/CN         50 mL         50 mL         555064         06/27/19 14:53 QTN         TAL IRV           Total/NA         Analysis         SM 4500 CN E         1         555114         06/27/19 20:43 QTN         TAL IRV           Total/NA         Prep         SM 4500 NH3 B         2.0 mL         50 mL         555710         07/02/19 04:00 YZ         TAL IRV           Total/NA         Analysis         SM 4500 NH3 D         1         555735         07/02/19 04:00 YZ         TAL IRV           Total/NA         Analysis         SM 4500 NH3 D         1         555735         07/02/19 07:00 YZ         TAL IRV           Total/NA         Analysis         SM 5220D         50         2.5 mL         2.5 mL         555681         07/01/19 18:37 KYP         TAL IRV  | Total/NA          | Analysis | ASTM D5057-90   |     | 1      | 50 g     | 50 mL   | 284432 | 07/10/19 15:27 | TAM     | TAL PIT |
| Total/NA         Analysis         SM 4500 CN E         1         555114         06/27/19 20:43 QTN         TAL IRV           Total/NA         Prep         SM 4500 NH3 B         2.0 mL         50 mL         555710         07/02/19 04:00 YZ         TAL IRV           Total/NA         Analysis         SM 4500 NH3 D         1         555735         07/02/19 07:00 YZ         TAL IRV           Total/NA         Analysis         SM 520D         50         2.5 mL         2.5 mL         555681         07/01/19 18:37 KYP         TAL IRV   | Total/NA          | Analysis | SM 2540B        |     | 1      | 5 mL     | 100 mL  | 554877 | 06/26/19 17:46 | HTL     | TAL IRV |
| Total/NA     Prep     SM 4500 NH3 B     2.0 mL     50 mL     555710     07/02/19 04:00 YZ     TAL IRV       Total/NA     Analysis     SM 4500 NH3 D     1     555735     07/02/19 07:00 YZ     TAL IRV       Total/NA     Analysis     SM 520D     50     2.5 mL     2.5 mL     555681     07/01/19 18:37 KYP     TAL IRV  | Total/NA          | Prep     | Distill/CN      |     |        | 50 mL    | 50 mL   | 555064 | 06/27/19 14:53 | QTN     | TAL IRV |
| Total/NA         Analysis         SM 4500 NH3 D         1         555735         07/02/19 07:00 YZ         TAL IRV           Total/NA         Analysis         SM 5220D         50         2.5 mL         2.5 mL         555681         07/01/19 18:37 KYP         TAL IRV   | Total/NA          | Analysis | SM 4500 CN E    |     | 1      |          |         | 555114 | 06/27/19 20:43 | QTN     | TAL IRV |
| Total/NA Analysis SM 5220D 50 2.5 mL 2.5 mL 555681 07/01/19 18:37 KYP TAL IRV  | Total/NA          | Prep     | SM 4500 NH3 B   |     |        | 2.0 mL   | 50 mL   | 555710 | 07/02/19 04:00 | YZ      | TAL IRV |
|  | Total/NA          | Analysis | SM 4500 NH3 D   |     | 1      |          |         | 555735 | 07/02/19 07:00 | ΥZ      | TAL IRV |
| Total/NA Analysis Total Nitrogen 1 556060 07/03/19 14:08 NN TAL IRV  | Total/NA          | Analysis | SM 5220D        |     | 50     | 2.5 mL   | 2.5 mL  | 555681 | 07/01/19 18:37 | KYP     | TAL IRV |
|  | Total/NA          | Analysis | Total Nitrogen  |     | 1      |          |         | 556060 | 07/03/19 14:08 | NN      | TAL IRV |

# Client Sample ID: 0620 OD STREAMS Date Collected: 06/20/19 06:33 Date Received: 06/26/19 10:30

|                   | Batch    | Batch       |     | Dil    | Initial | Final  | Batch  | Prepared       |         |         |
|-------------------|----------|-------------|-----|--------|---------|--------|--------|----------------|---------|---------|
| Ргер Туре         | Туре     | Method      | Run | Factor | Amount  | Amount | Number | or Analyzed    | Analyst | Lab     |
| Total/NA          | Analysis | 8260B       |     | 10     | 10 mL   | 10 mL  | 555513 | 07/01/19 15:55 | MML     | TAL IRV |
| Total/NA          | Prep     | 625         |     |        | 965 mL  | 4.0 mL | 555027 | 06/27/19 12:00 | HCK     | TAL IRV |
| Total/NA          | Analysis | 625         |     | 20     |         |        | 555490 | 07/01/19 08:14 | P1R     | TAL IRV |
| Total/NA          | Prep     | 8315_W_Prep |     |        | 20 mL   | 1 mL   | 555345 | 06/29/19 05:05 | FTD     | TAL IRV |
| Total/NA          | Analysis | 8315A       |     | 1      |         |        | 555542 | 07/01/19 13:02 | D1D     | TAL IRV |
| Total/NA          | Analysis | NO3NO2 Calc |     | 1      |         |        | 555628 | 07/01/19 15:00 | NN      | TAL IRV |
| Total Recoverable | Prep     | 3005A       |     |        | 25 mL   | 25 mL  | 556202 | 07/05/19 09:49 | EP      | TAL IRV |
| Total Recoverable | Analysis | 6010B       |     | 5      |         |        | 556398 | 07/05/19 19:57 | VS      | TAL IRV |

# Lab Sample ID: 440-244608-2

Matrix: Water

Initial

Amount

20 mL

100 mL

2 mL

0.5 mL

0.025 mL

6 mL

6 mL

50 g

2 mL

50 mL

0.1 mL

2.5 mL

Final

Amount

20 mL

1000 mL

100 mL

25 mL

50 mL

6 mL

6 mL

50 mL

100 mL

50 mL

50 mL

2.5 mL

Batch

Number

555647

555834

555282

555325

554894

555267

555602

306826

555362

555384

576470

576857

284432

554877

555064

555114

555710

555735

555681

556060

Dil

5

1

1

10

100

1

20

1

1

1

1

1

250

Factor

Run

#### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

Batch

Туре

Prep

Prep

Prep

Analysis

Prep

Prep

Prep

Prep

Prep Type

Total/NA

# Client Sample ID: 0620 OD STREAMS Date Collected: 06/20/19 06:33 Date Received: 06/26/19 10:30

Batch

7470A

7470A

1664A

1664A

2540E

351.2

351.2

353.2

365.3

420.1

365.2/365.3/365

ASTM D5057-90

SM 4500 CN E

SM 4500 NH3 B

SM 4500 NH3 D

Distill/Phenol

SM 2540B

Distill/CN

SM 5220D

**Total Nitrogen** 

Method

Lab

TAL IRV

TAL SAC

TAL IRV

TAL IRV

TAL SAV

# Lab Sample ID: 440-244608-2 Matrix: Water

Analyst

DB

Prepared

or Analyzed

07/01/19 16:27

07/02/19 12:28 DB

06/28/19 15:07 AJH

06/28/19 18:55 AJH

06/26/19 19:05 HTL

06/28/19 14:14 HTL

06/28/19 21:50 HTL

07/10/19 11:01 TCS

06/29/19 08:17 MMP

06/29/19 10:49 MMP

07/01/19 10:02 NVF

07/02/19 10:54 NVF

07/10/19 15:25 TAM

06/26/19 17:46 HTL

06/27/19 14:53 QTN

06/27/19 20:43 QTN

07/02/19 04:00 YZ

| 8 |
|---|
| 9 |
|   |
|   |
|   |
| 3 |
|   |

| TAL SAV |    |
|---------|----|
| TAL PIT |    |
| TAL IRV |    |
| TAL IRV | 13 |
| TAL IRV |    |
| TAL IRV |    |
| TAL IRV |    |

#### 07/02/19 07:00 YZ TAL IRV 07/01/19 18:37 KYP TAL IRV 07/03/19 14:08 NN TAL IRV

# **Client Sample ID: 0621 BUTCHER** Date Collected: 06/21/19 06:01 Date Received: 06/26/19 10:30

# Lab Sample ID: 440-244608-3

Matrix: Water

|                   | Batch    | Batch       |     | Dil    | Initial | Final   | Batch  | Prepared       |         |         |
|-------------------|----------|-------------|-----|--------|---------|---------|--------|----------------|---------|---------|
| Prep Type         | Туре     | Method      | Run | Factor | Amount  | Amount  | Number | or Analyzed    | Analyst | Lab     |
| Total/NA          | Analysis | 8260B       | RA  | 1      | 10 mL   | 10 mL   | 555721 | 07/02/19 11:58 | DCI     | TAL IRV |
| Total/NA          | Analysis | 8260B       |     | 1      | 10 mL   | 10 mL   | 555513 | 07/01/19 16:23 | MML     | TAL IRV |
| Total/NA          | Prep     | 625         |     |        | 975 mL  | 4.0 mL  | 555027 | 06/27/19 12:00 | HCK     | TAL IRV |
| Total/NA          | Analysis | 625         |     | 10     |         |         | 555490 | 07/01/19 07:25 | P1R     | TAL IRV |
| Total/NA          | Prep     | 8315_W_Prep |     |        | 20 mL   | 1 mL    | 555345 | 06/29/19 05:05 | FTD     | TAL IRV |
| Total/NA          | Analysis | 8315A       |     | 1      |         |         | 555542 | 07/01/19 13:23 | D1D     | TAL IRV |
| Total/NA          | Analysis | NO3NO2 Calc |     | 1      |         |         | 555628 | 07/01/19 15:00 | NN      | TAL IRV |
| Total Recoverable | Prep     | 3005A       |     |        | 25 mL   | 25 mL   | 554883 | 06/26/19 17:58 | BV      | TAL IRV |
| Total Recoverable | Analysis | 6010B       |     | 10     |         |         | 555055 | 06/27/19 13:33 | TQN     | TAL IRV |
| Total/NA          | Prep     | 7470A       |     |        | 20 mL   | 20 mL   | 555647 | 07/01/19 16:27 | DB      | TAL IRV |
| Total/NA          | Analysis | 7470A       |     | 5      |         |         | 555834 | 07/02/19 12:30 | DB      | TAL IRV |
| Total/NA          | Prep     | 1664A       |     |        | 200 mL  | 1000 mL | 555282 | 06/28/19 15:07 | AJH     | TAL IRV |
| Total/NA          | Analysis | 1664A       |     | 1      |         |         | 555325 | 06/28/19 18:55 | AJH     | TAL IRV |
| Total/NA          | Analysis | 2540E       |     | 1      | 5 mL    | 100 mL  | 554894 | 06/26/19 19:05 | HTL     | TAL IRV |
| Total/NA          | Prep     | 351.2       |     |        | 0.5 mL  | 25 mL   | 555267 | 06/28/19 14:14 | HTL     | TAL IRV |
| Total/NA          | Analysis | 351.2       |     | 2      |         |         | 555602 | 06/28/19 21:50 | HTL     | TAL IRV |
| Total/NA          | Analysis | 353.2       |     | 100    |         |         | 306826 | 07/10/19 11:05 | TCS     | TAL SAC |

Initial

Amount

0.025 mL

6 mL

6 mL

50 g

5 mL

50 mL

1.0 mL

2.5 mL

Final

Amount

50 mL

6 mL

6 mL

50 mL

100 mL

50 mL

50 mL

2.5 mL

Batch

Number

555362

555384

576470

576857

284432

554877

555064

555114

555710

555735

555681

556060

555384

576470

576857

284432

554877

555064

555114

6 mL

6 mL

50 mL

100 mL

50 mL

06/29/19 10:50 MMP

07/01/19 10:02 NVF

07/02/19 10:54 NVF

07/10/19 15:22 TAM

06/26/19 17:46 HTL

06/27/19 14:53 QTN

06/27/19 20:43 QTN

Dil

1

1

1

1

1

1

1

200

Factor

Run

# Client Sample ID: 0621 BUTCHER Date Collected: 06/21/19 06:01 Date Received: 06/26/19 10:30

Batch

Туре

Prep

Prep

Analysis

Analysis

Analysis

Analysis

Analysis

Analysis

Analysis

Analysis

Date Collected: 06/21/19 06:20

Client Sample ID: 0621 OD STREAMS

Prep

Prep

Prep Type

Total/NA

Batch

365.3

420.1

Method

365.2/365.3/365

ASTM D5057-90

SM 4500 CN E

SM 4500 NH3 B

SM 4500 NH3 D

Distill/Phenol

SM 2540B

Distill/CN

SM 5220D

365.3

420.1

Distill/Phenol

SM 2540B

Distill/CN

ASTM D5057-90

SM 4500 CN E

Analysis

Analysis

Analysis

Analysis

Analysis

Prep

Prep

**Total Nitrogen** 

Lab

TAL IRV

TAL IRV

TAL SAV

TAL SAV

TAL PIT

TAL IRV

# Lab Sample ID: 440-244608-3 Matrix: Water

Analyst

MMP

MMP

Prepared

or Analyzed

06/29/19 08:17

06/29/19 10:49

07/01/19 10:02 NVF

07/02/19 10:49 NVF

07/10/19 15:24 TAM

06/26/19 17:46 HTL

06/27/19 14:53 QTN

06/27/19 20:43 QTN

07/02/19 04:00 YZ

07/02/19 07:00 YZ

07/01/19 18:37 KYP

07/03/19 14:08 NN

|                   | Batch    | Batch           |     | Dil    | Initial  | Final   | Batch  | Prepared       |         |         |
|-------------------|----------|-----------------|-----|--------|----------|---------|--------|----------------|---------|---------|
| Prep Туре         | Туре     | Method          | Run | Factor | Amount   | Amount  | Number | or Analyzed    | Analyst | Lab     |
| Total/NA          | Analysis | 8260B           |     | 10     | 10 mL    | 10 mL   | 555513 | 07/01/19 16:51 | MML     | TAL IRV |
| Total/NA          | Prep     | 625             |     |        | 955 mL   | 4.0 mL  | 555027 | 06/27/19 12:00 | HCK     | TAL IRV |
| Total/NA          | Analysis | 625             |     | 20     |          |         | 555490 | 07/01/19 07:49 | P1R     | TAL IRV |
| Total/NA          | Prep     | 8315_W_Prep     |     |        | 20 mL    | 1 mL    | 555345 | 06/29/19 05:05 | FTD     | TAL IRV |
| Total/NA          | Analysis | 8315A           |     | 1      |          |         | 555542 | 07/01/19 13:44 | D1D     | TAL IRV |
| Total/NA          | Analysis | NO3NO2 Calc     |     | 1      |          |         | 555628 | 07/01/19 15:00 | NN      | TAL IRV |
| Total Recoverable | Prep     | 3005A           |     |        | 25 mL    | 25 mL   | 556202 | 07/05/19 09:49 | EP      | TAL IRV |
| Total Recoverable | Analysis | 6010B           |     | 5      |          |         | 556398 | 07/05/19 19:59 | VS      | TAL IRV |
| Total/NA          | Prep     | 7470A           |     |        | 20 mL    | 20 mL   | 555647 | 07/01/19 16:27 | DB      | TAL IRV |
| Total/NA          | Analysis | 7470A           |     | 5      |          |         | 555834 | 07/02/19 12:32 | DB      | TAL IRV |
| Total/NA          | Prep     | 1664A           |     |        | 100 mL   | 1000 mL | 555282 | 06/28/19 15:07 | AJH     | TAL IRV |
| Total/NA          | Analysis | 1664A           |     | 1      |          |         | 555325 | 06/28/19 18:55 | AJH     | TAL IRV |
| Total/NA          | Analysis | 2540E           |     | 1      | 2 mL     | 100 mL  | 554894 | 06/26/19 19:05 | HTL     | TAL IRV |
| Total/NA          | Prep     | 351.2           |     |        | 0.5 mL   | 25 mL   | 555267 | 06/28/19 14:14 | HTL     | TAL IRV |
| Total/NA          | Analysis | 351.2           |     | 10     |          |         | 555602 | 06/28/19 21:50 | HTL     | TAL IRV |
| Fotal/NA          | Analysis | 353.2           |     | 100    |          |         | 306826 | 07/10/19 11:09 | TCS     | TAL SAC |
| Total/NA          | Prep     | 365.2/365.3/365 |     |        | 0.025 mL | 50 mL   | 555362 | 06/29/19 08:17 | MMP     | TAL IRV |

# Lab Sample ID: 440-244608-4 Matrix: Water

Eurofins TestAmerica, Irvine

1

50

1

1

1

6 mL

6 mL

50 g

2 mL

50 mL

TAL IRV

TAL SAV

TAL SAV

TAL PIT

TAL IRV

TAL IRV

TAL IRV

# Client Sample ID: 0621 OD STREAMS Date Collected: 06/21/19 06:20 Date Received: 06/26/19 10:30

|                   |                 |                 |                         | Ma      | trix: Wa | : Water |  |
|-------------------|-----------------|-----------------|-------------------------|---------|----------|---------|--|
| Initial<br>Amount | Final<br>Amount | Batch<br>Number | Prepared<br>or Analyzed | Analyst | Lab      |         |  |

|           | Batch    | Batch          |     | Dil    | Initial | Final  | Batch  | Prepared       |         |         |
|-----------|----------|----------------|-----|--------|---------|--------|--------|----------------|---------|---------|
| Prep Type | Туре     | Method         | Run | Factor | Amount  | Amount | Number | or Analyzed    | Analyst | Lab     |
| Total/NA  | Prep     | SM 4500 NH3 B  |     |        | 0.1 mL  | 50 mL  | 555710 | 07/02/19 04:00 | YZ      | TAL IRV |
| Total/NA  | Analysis | SM 4500 NH3 D  |     | 1      |         |        | 555735 | 07/02/19 07:00 | YZ      | TAL IRV |
| Total/NA  | Analysis | SM 5220D       |     | 200    | 2.5 mL  | 2.5 mL | 555681 | 07/01/19 18:37 | KYP     | TAL IRV |
| Total/NA  | Analysis | Total Nitrogen |     | 1      |         |        | 556060 | 07/03/19 14:08 | NN      | TAL IRV |

#### Laboratory References:

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058 TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600 TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858 Job ID: 440-244608-1

Lab Sample ID: 440-244608-4

# Method: 8260B - Volatile Organic Compounds (GC/MS)

#### Lab Sample ID: MB 440-555513/4 Matrix: Water Analysis Batch: 555513

# **Client Sample ID: Method Blank** Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Job ID: 440-244608-1

|                             | MB        | MB        |          |      |      |   |          |                |         |
|-----------------------------|-----------|-----------|----------|------|------|---|----------|----------------|---------|
| Analyte                     | Result    | Qualifier | RL       | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
| 1,2-Dichloropropane         | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/01/19 08:48 | 1       |
| Benzene                     | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/01/19 08:48 | 1       |
| Chloroform                  | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/01/19 08:48 | 1       |
| Ethylbenzene                | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/01/19 08:48 | 1       |
| m,p-Xylene                  | ND        |           | 2.0      | 0.50 | ug/L |   |          | 07/01/19 08:48 | 1       |
| Methylene Chloride          | ND        |           | 5.0      | 1.1  | ug/L |   |          | 07/01/19 08:48 | 1       |
| o-Xylene                    | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/01/19 08:48 | 1       |
| Toluene                     | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/01/19 08:48 | 1       |
| Xylenes, Total              | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/01/19 08:48 | 1       |
|                             | MB        | МВ        |          |      |      |   |          |                |         |
| Surrogate                   | %Recovery | Qualifier | Limits   |      |      |   | Prepared | Analyzed       | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 102       |           | 80 - 120 |      |      |   |          | 07/01/19 08:48 | 1       |
| Dibromofluoromethane (Surr) | 92        |           | 76 - 132 |      |      |   |          | 07/01/19 08:48 | 1       |
| Toluene-d8 (Surr)           | 105       |           | 80 - 128 |      |      |   |          | 07/01/19 08:48 | 1       |

#### Lab Sample ID: LCS 440-555513/5 Matrix: Water Analysis Batch: 555513

|                     | Spike | LCS    | LCS       |      |   |      | %Rec.    |
|---------------------|-------|--------|-----------|------|---|------|----------|
| Analyte             | Added | Result | Qualifier | Unit | D | %Rec | Limits   |
| 1,2-Dichloropropane | 10.0  | 9.86   |           | ug/L |   | 99   | 67 - 130 |
| Benzene             | 10.0  | 10.3   |           | ug/L |   | 103  | 68 - 130 |
| Chloroform          | 10.0  | 10.3   |           | ug/L |   | 103  | 70 - 130 |
| Ethylbenzene        | 10.0  | 11.5   |           | ug/L |   | 115  | 70 - 130 |
| m,p-Xylene          | 10.0  | 11.3   |           | ug/L |   | 113  | 70 - 130 |
| Methylene Chloride  | 10.0  | 8.32   |           | ug/L |   | 83   | 52 - 130 |
| o-Xylene            | 10.0  | 11.1   |           | ug/L |   | 111  | 70 - 130 |
| Toluene             | 10.0  | 11.4   |           | ug/L |   | 114  | 70 - 130 |
| loluene             | 10.0  | 11.4   |           | ug/L |   | 114  | 70 - 130 |

|                             | LCS       | LCS       |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 93        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 92        |           | 76 - 132 |
| Toluene-d8 (Surr)           | 100       |           | 80 - 128 |

#### Lab Sample ID: LCSD 440-555513/7 **Matrix: Water** Analysis Batch: 555513

| Client Sample ID: Lab | Control Sample Dup  |
|-----------------------|---------------------|
|                       | Prep Type: Total/NA |
|                       |                     |

|                     | Spike | LCSD   | LCSD      |      |   |      | %Rec.    |     | RPD   |
|---------------------|-------|--------|-----------|------|---|------|----------|-----|-------|
| Analyte             | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
| 1,2-Dichloropropane | 10.0  | 9.86   |           | ug/L |   | 99   | 67 - 130 | 0   | 20    |
| Benzene             | 10.0  | 10.5   |           | ug/L |   | 105  | 68 - 130 | 1   | 20    |
| Chloroform          | 10.0  | 10.6   |           | ug/L |   | 106  | 70 - 130 | 3   | 20    |
| Ethylbenzene        | 10.0  | 11.4   |           | ug/L |   | 114  | 70 - 130 | 1   | 20    |
| m,p-Xylene          | 10.0  | 11.2   |           | ug/L |   | 112  | 70 - 130 | 0   | 20    |
| Methylene Chloride  | 10.0  | 8.64   |           | ug/L |   | 86   | 52 - 130 | 4   | 20    |
| o-Xylene            | 10.0  | 10.8   |           | ug/L |   | 108  | 70 - 130 | 2   | 20    |
| Toluene             | 10.0  | 11.3   |           | ug/L |   | 113  | 70 - 130 | 1   | 20    |

# **QC Sample Results**

# Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

#### Lab Sample ID: LCSD 440-555513/7 **Matrix: Water** Analysis Batch: 555513

|                             | LCSD      | LCSD      |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 94        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 94        |           | 76 - 132 |
| Toluene-d8 (Surr)           | 99        |           | 80 - 128 |

#### Lab Sample ID: 550-124860-N-1 MS **Matrix: Water** Analysis Batch: 555513

| Analysis Datch. 555515 | Sample    | Sample    | Spike  | MS     | MS        |      |        | %Rec.    |  |
|------------------------|-----------|-----------|--------|--------|-----------|------|--------|----------|--|
| Analyte                | Result    | Qualifier | Added  | Result | Qualifier | Unit | D %Rec | Limits   |  |
| 1,2-Dichloropropane    | ND        |           | 10.0   | 8.42   |           | ug/L | 84     | 69 - 130 |  |
| Benzene                | ND        |           | 10.0   | 9.45   |           | ug/L | 94     | 66 - 130 |  |
| Chloroform             | 1.9       | J         | 10.0   | 11.2   |           | ug/L | 93     | 70 - 130 |  |
| Ethylbenzene           | ND        |           | 10.0   | 11.5   |           | ug/L | 115    | 70 - 130 |  |
| m,p-Xylene             | ND        |           | 10.0   | 11.1   |           | ug/L | 111    | 70 - 133 |  |
| Methylene Chloride     | ND        |           | 10.0   | 7.08   |           | ug/L | 71     | 52 - 130 |  |
| o-Xylene               | ND        |           | 10.0   | 10.4   |           | ug/L | 104    | 70 - 133 |  |
| Toluene                | ND        |           | 10.0   | 11.4   |           | ug/L | 114    | 70 - 130 |  |
|                        | MS        | MS        |        |        |           |      |        |          |  |
| Surrogate              | %Recovery | Qualifier | Limits |        |           |      |        |          |  |

| Surrogate                   | %Recovery | Qualifier | Limits   |
|-----------------------------|-----------|-----------|----------|
| 4-Bromofluorobenzene (Surr) | 98        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 85        |           | 76 - 132 |
| Toluene-d8 (Surr)           | 107       |           | 80 - 128 |

#### Lab Sample ID: 550-124860-N-1 MSD Matrix: Water Analysis Batch: 555513

| ·····,              | Sample | Sample    | Spike | MSD    | MSD       |      |   |      | %Rec.    |     | RPD   |
|---------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|-----|-------|
| Analyte             | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
| 1,2-Dichloropropane | ND     |           | 10.0  | 9.02   |           | ug/L |   | 90   | 69 - 130 | 7   | 20    |
| Benzene             | ND     |           | 10.0  | 10.3   |           | ug/L |   | 103  | 66 - 130 | 9   | 20    |
| Chloroform          | 1.9    | J         | 10.0  | 11.9   |           | ug/L |   | 100  | 70 - 130 | 7   | 20    |
| Ethylbenzene        | ND     |           | 10.0  | 12.0   |           | ug/L |   | 120  | 70 - 130 | 4   | 20    |
| m,p-Xylene          | ND     |           | 10.0  | 11.9   |           | ug/L |   | 119  | 70 - 133 | 7   | 25    |
| Methylene Chloride  | ND     |           | 10.0  | 7.70   |           | ug/L |   | 77   | 52 - 130 | 8   | 20    |
| o-Xylene            | ND     |           | 10.0  | 11.1   |           | ug/L |   | 111  | 70 - 133 | 6   | 20    |
| Toluene             | ND     |           | 10.0  | 12.1   |           | ug/L |   | 121  | 70 - 130 | 6   | 20    |
|                     | MSD    | MSD       |       |        |           |      |   |      |          |     |       |

|                             | MSD       | W3D       |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 97        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 86        |           | 76 - 132 |
| Toluene-d8 (Surr)           | 106       |           | 80 - 128 |

#### Lab Sample ID: MB 440-555721/4 **Client Sample ID: Method Blank** Matrix: Water Prep Type: Total/NA Analysis Batch: 555721 MB MB Analyte **Result Qualifier** RL MDL Unit D Prepared Analyzed Dil Fac 2.0 07/02/19 08:23 1,2-Dichloropropane ND 0.25 ug/L 1

# Client Sample ID: Lab Control Sample Dup **Prep Type: Total/NA**

| Client Sample ID: Matrix Spike |
|--------------------------------|
| Prep Type: Total/NA            |

# **Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA**

# Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

#### Lab Sample ID: MB 440-555721/4 Matrix: Water

# Client Sample ID: Method Blank Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Matrix: Water Analysis Batch: 555721

|                    | MB     | MB        |     |      |      |   |          |                |         |
|--------------------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Analyte            | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
| Benzene            | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/02/19 08:23 | 1       |
| Chloroform         | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/02/19 08:23 | 1       |
| Ethylbenzene       | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/02/19 08:23 | 1       |
| m,p-Xylene         | ND     |           | 2.0 | 0.50 | ug/L |   |          | 07/02/19 08:23 | 1       |
| Methylene Chloride | ND     |           | 5.0 | 1.1  | ug/L |   |          | 07/02/19 08:23 | 1       |
| o-Xylene           | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/02/19 08:23 | 1       |
| Toluene            | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/02/19 08:23 | 1       |
| Xylenes, Total     | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/02/19 08:23 | 1       |
|                    | МВ     | МВ        |     |      |      |   |          |                |         |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 90        |           | 80 - 120 |          | 07/02/19 08:23 | 1       |
| Dibromofluoromethane (Surr) | 104       |           | 76 - 132 |          | 07/02/19 08:23 | 1       |
| Toluene-d8 (Surr)           | 107       |           | 80 - 128 |          | 07/02/19 08:23 | 1       |

#### Lab Sample ID: LCS 440-555721/5 Matrix: Water Analysis Batch: 555721

| -                   | Spike | LCS    | LCS       |      |   |      | %Rec.    |
|---------------------|-------|--------|-----------|------|---|------|----------|
| Analyte             | Added | Result | Qualifier | Unit | D | %Rec | Limits   |
| 1,2-Dichloropropane | 10.0  | 9.20   |           | ug/L |   | 92   | 67 - 130 |
| Benzene             | 10.0  | 9.62   |           | ug/L |   | 96   | 68 - 130 |
| Chloroform          | 10.0  | 10.3   |           | ug/L |   | 103  | 70 - 130 |
| Ethylbenzene        | 10.0  | 9.47   |           | ug/L |   | 95   | 70 - 130 |
| m,p-Xylene          | 10.0  | 9.61   |           | ug/L |   | 96   | 70 - 130 |
| Methylene Chloride  | 10.0  | 10.6   |           | ug/L |   | 106  | 52 - 130 |
| o-Xylene            | 10.0  | 10.2   |           | ug/L |   | 102  | 70 - 130 |
| Toluene             | 10.0  | 9.37   |           | ug/L |   | 94   | 70 - 130 |
|                     |       |        |           |      |   |      |          |

| LCS       | LCS                    |          |
|-----------|------------------------|----------|
| %Recovery | Qualifier              | Limits   |
| 92        |                        | 80 - 120 |
| 105       |                        | 76 - 132 |
| 104       |                        | 80 - 128 |
|           | %Recovery<br>92<br>105 | 105      |

#### Lab Sample ID: 440-244488-B-3 MS Matrix: Water Analysis Batch: 555721

|                     | Sample | Sample    | Spike | MS     | MS        |      |   |      | %Rec.    |  |
|---------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|--|
| Analyte             | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   |  |
| 1,2-Dichloropropane | ND     |           | 10.0  | 8.65   |           | ug/L |   | 86   | 69 - 130 |  |
| Benzene             | ND     |           | 10.0  | 9.62   |           | ug/L |   | 96   | 66 - 130 |  |
| Chloroform          | ND     |           | 10.0  | 10.6   |           | ug/L |   | 106  | 70 - 130 |  |
| Ethylbenzene        | ND     |           | 10.0  | 8.85   |           | ug/L |   | 89   | 70 - 130 |  |
| m,p-Xylene          | ND     |           | 10.0  | 9.38   |           | ug/L |   | 94   | 70 - 133 |  |
| Methylene Chloride  | ND     |           | 10.0  | 10.6   |           | ug/L |   | 106  | 52 - 130 |  |
| o-Xylene            | ND     |           | 10.0  | 10.1   |           | ug/L |   | 101  | 70 - 133 |  |
| Toluene             | ND     |           | 10.0  | 9.06   |           | ug/L |   | 91   | 70 - 130 |  |

# Eurofins TestAmerica, Irvine

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

5

8

# **QC Sample Results**

Prep Type: Total/NA

**Client Sample ID: Matrix Spike Duplicate** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

Drew Detaks CCC007

**Client Sample ID: Matrix Spike Prep Type: Total/NA** 

# Lab Sample ID: 440-244488-B-3 MS **Matrix: Water** Analysis Batch: 555721

|                             | MS        | MS        |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 98        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 103       |           | 76 - 132 |
| Toluene-d8 (Surr)           | 101       |           | 80 - 128 |

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

#### Lab Sample ID: 440-244488-B-3 MSD **Matrix: Water** Analysis Batch: 555721

| Analysis Batch: 555/21      |           |           |          |        |           |      |   |      |          |     |       |
|-----------------------------|-----------|-----------|----------|--------|-----------|------|---|------|----------|-----|-------|
|                             | Sample    | Sample    | Spike    | MSD    | MSD       |      |   |      | %Rec.    |     | RPD   |
| Analyte                     | Result    | Qualifier | Added    | Result | Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
| 1,2-Dichloropropane         | ND        |           | 10.0     | 9.40   |           | ug/L |   | 94   | 69 - 130 | 8   | 20    |
| Benzene                     | ND        |           | 10.0     | 10.4   |           | ug/L |   | 104  | 66 - 130 | 7   | 20    |
| Chloroform                  | ND        |           | 10.0     | 11.5   |           | ug/L |   | 115  | 70 - 130 | 8   | 20    |
| Ethylbenzene                | ND        |           | 10.0     | 9.85   |           | ug/L |   | 99   | 70 - 130 | 11  | 20    |
| m,p-Xylene                  | ND        |           | 10.0     | 9.97   |           | ug/L |   | 100  | 70 - 133 | 6   | 25    |
| Methylene Chloride          | ND        |           | 10.0     | 12.2   |           | ug/L |   | 122  | 52 - 130 | 14  | 20    |
| o-Xylene                    | ND        |           | 10.0     | 10.9   |           | ug/L |   | 109  | 70 - 133 | 7   | 20    |
| Toluene                     | ND        |           | 10.0     | 10.0   |           | ug/L |   | 100  | 70 - 130 | 10  | 20    |
|                             | MSD       | MSD       |          |        |           |      |   |      |          |     |       |
| Surrogate                   | %Recovery | Qualifier | Limits   |        |           |      |   |      |          |     |       |
| 4-Bromofluorobenzene (Surr) | 95        |           | 80 - 120 |        |           |      |   |      |          |     |       |
| Dibromofluoromethane (Surr) | 109       |           | 76 - 132 |        |           |      |   |      |          |     |       |
| Toluene-d8 (Surr)           | 101       |           | 80 - 128 |        |           |      |   |      |          |     |       |
|                             |           |           |          |        |           |      |   |      |          |     |       |

# Method: 625 - Semivolatile Organic Compounds (GC/MS)

#### Lab Sample ID: MB 440-555027/1-A **Matrix: Water** Analysia Potoby 555400

| -                           | MB        | MB        |          |     |      |   |                |                |         |
|-----------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Analyte                     | Result    | Qualifier | RL       | MDL | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Bis(2-ethylhexyl) phthalate | ND        |           | 20       | 4.0 | ug/L |   | 06/27/19 12:00 | 06/30/19 19:08 | 1       |
|                             | MB        | MB        |          |     |      |   |                |                |         |
| Surrogate                   | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 2-Fluorobiphenyl            | 71        |           | 50 - 120 |     |      |   | 06/27/19 12:00 | 06/30/19 19:08 | 1       |
| 2-Fluorophenol              | 63        |           | 30 - 120 |     |      |   | 06/27/19 12:00 | 06/30/19 19:08 | 1       |
| 2,4,6-Tribromophenol        | 76        |           | 40 - 120 |     |      |   | 06/27/19 12:00 | 06/30/19 19:08 | 1       |
| Nitrobenzene-d5             | 71        |           | 45 - 120 |     |      |   | 06/27/19 12:00 | 06/30/19 19:08 | 1       |
| Terphenyl-d14               | 77        |           | 10 - 150 |     |      |   | 06/27/19 12:00 | 06/30/19 19:08 | 1       |
| Phenol-d6                   | 66        |           | 35 - 120 |     |      |   | 06/27/19 12:00 | 06/30/19 19:08 | 1       |

| I | Lab Sample ID: LCS 440-555027/2-A |       |        |           | Cli  | ent Sar | nple ID | : Lab Control Sample |
|---|-----------------------------------|-------|--------|-----------|------|---------|---------|----------------------|
|   | Matrix: Water                     |       |        |           |      |         |         | Prep Type: Total/NA  |
|   | Analysis Batch: 555490            |       |        |           |      |         |         | Prep Batch: 555027   |
|   |                                   | Spike | LCS    | LCS       |      |         |         | %Rec.                |
|   | Analyte                           | Added | Result | Qualifier | Unit | D       | %Rec    | Limits               |
|   | Bis(2-ethylhexyl) phthalate       | 100   | 100    |           | ug/L |         | 100     | 10 - 150             |

# Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

| Lab Sample ID: LCS 440-<br>Matrix: Water<br>Analysis Batch: 555490 | 555027/2-A       |                  |          |        |           | Clie      | nt Sa | nple ID | : Lab Cor<br>Prep Tyj<br>Prep Ba | pe: Tot | al/NA |
|--|------------------|------------------|----------|--------|-----------|-----------|-------|---------|----------------------------------|---------|-------|
| Surrogate  | LCS<br>%Recovery | LCS<br>Qualifier | Limits   |        |           |           |       |         |                                  |         |       |
| 2-Fluorobiphenyl   | 73               |                  | 50 - 120 |        |           |           |       |         |                                  |         |       |
| 2-Fluorophenol   | 64               |                  | 30 - 120 |        |           |           |       |         |                                  |         |       |
| 2,4,6-Tribromophenol   | 89               |                  | 40 - 120 |        |           |           |       |         |                                  |         |       |
| Nitrobenzene-d5  | 76               |                  | 45 - 120 |        |           |           |       |         |                                  |         |       |
| Terphenyl-d14  | 77               |                  | 10_150   |        |           |           |       |         |                                  |         |       |
| Phenol-d6  | 70               |                  | 35 - 120 |        |           |           |       |         |                                  |         |       |
| Lab Sample ID: LCSD 440  | )-555027/3-A     |                  |          |        | c         | Client Sa | ample | ID: Lat | o Control                        | Sample  | e Dup |
| Matrix: Water  |                  | -                |          |        |           |           |       |         | Prep Ty                          |         |       |
| Analysis Batch: 555490   |                  |                  |          |        |           |           |       |         | Prep Ba                          |         |       |
|  |                  |                  | Spike    | LCSD   | LCSD      |           |       |         | %Rec.                            |         | RPD   |
| Analyte  |                  |                  | Added    | Result | Qualifier | Unit      | D     | %Rec    | Limits                           | RPD     | Limit |
| Bis(2-ethylhexyl) phthalate  |                  |                  | 100      | 103    |           | ug/L      |       | 103     | 10 - 150                         | 3       | 35    |
|  | LCSD             | LCSD             |          |        |           |           |       |         |                                  |         |       |
| Surrogate  | %Recovery        | Qualifier        | Limits   |        |           |           |       |         |                                  |         |       |
| 2-Fluorobiphenyl   | 83               |                  | 50 - 120 |        |           |           |       |         |                                  |         |       |
|  | 70               |                  | 30 - 120 |        |           |           |       |         |                                  |         |       |
| 2-Fluorophenol   | 70               |                  | 30 - 120 |        |           |           |       |         |                                  |         |       |

45 - 120 10 - 150

35 - 120

#### └── Method: 8315A - Carbonyl Compounds (HPLC)

81

81 77

Nitrobenzene-d5

Terphenyl-d14

Phenol-d6

| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555542 | 5345/1-А<br>мв          | МВ        |        |       |        |       |       |      | Cli    | ent Sam     | ple ID: Metho<br>Prep Type: T<br>Prep Batch:           | otal/NA |
|--|-------------------------|-----------|--------|-------|--------|-------|-------|------|--------|-------------|--|---------|
| Analyte  | Result                  | Qualifier |        | RL    | I      | MDL I | Unit  |      | D P    | repared     | Analyzed   | Dil Fac |
| Formaldehyde   | ND                      |           |        | 0.010 | 0.0    | 0050  | mg/L  |      | 06/2   | 29/19 05:05 | 5 07/01/19 10:55                                       | 1       |
| Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 555542 | 5345/2-A                |           | Spike  |       | LCS    | LCS   |       | Clie | ent Sa | mple ID:    | : Lab Control<br>Prep Type: T<br>Prep Batch:<br>%Rec.  | otal/NA |
| Analyte  |                         |           | Added  |       | Result | Quali | ifier | Unit | D      | %Rec        | Limits   |         |
| Formaldehyde   |                         |           | 0.0500 |       | 0.0518 |       |       | mg/L |        | 104         | 70 - 129   |         |
| Lab Sample ID: 440-244801<br>Matrix: Water<br>Analysis Batch: 555542 | -A-1-A MS<br>Sample Sar | nple      | Spike  |       | MS     | MS    |       |      | С      | lient Saı   | mple ID: Matri<br>Prep Type: T<br>Prep Batch:<br>%Rec. | otal/NA |
| Analyte  | Result Qu               | •         | Added  |       | Result | Quali | ifier | Unit | D      | %Rec        | Limits   |         |
| Formaldehyde   | 0.0085 J                |           | 0.0500 |       | 0.0615 |       |       | mg/L |        | 106         | 50 - 150   |         |

**Client Sample ID: Method Blank** 

5

8

# Method: 8315A - Carbonyl Compounds (HPLC) (Continued)

| Lab Sample ID: 440-24480 | 1-A-1-B MS | D         |        |        |           | Client | Samp | le ID: N | latrix Spil | ke Dup  | licate |
|--------------------------|------------|-----------|--------|--------|-----------|--------|------|----------|-------------|---------|--------|
| Matrix: Water            |            |           |        |        |           |        |      |          | Prep Ty     | pe: Tot | al/NA  |
| Analysis Batch: 555542   |            |           |        |        |           |        |      |          | Prep Ba     | atch: 5 | 55345  |
|                          | Sample     | Sample    | Spike  | MSD    | MSD       |        |      |          | %Rec.       |         | RPD    |
| Analyte                  | Result     | Qualifier | Added  | Result | Qualifier | Unit   | D    | %Rec     | Limits      | RPD     | Limit  |
| Formaldehyde             | 0.0085     | J         | 0.0500 | 0.0629 |           | mg/L   |      | 109      | 50 - 150    | 2       | 20     |

# Method: 6010B - Metals (ICP)

Lab Sample ID: MB 440-554883/1-A

| Matrix: Water<br>Analysis Batch: 555055 |        |           |        |        |      |   |                | e: Total Recov<br>Prep Batch: { |         |
|---|--------|-----------|--------|--------|------|---|----------------|---------------------------------|---------|
|   | MB     | МВ        |        |        |      |   |                |                                 |         |
| Analyte                                 | Result | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed                        | Dil Fac |
| Aluminum                                | ND     |           | 0.10   | 0.050  | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Arsenic                                 | ND     |           | 0.010  | 0.0089 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Barium                                  | ND     |           | 0.010  | 0.0050 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Boron                                   | ND     |           | 0.050  | 0.025  | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Cadmium                                 | ND     |           | 0.0050 | 0.0025 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Chromium                                | ND     |           | 0.0050 | 0.0025 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Copper                                  | ND     |           | 0.010  | 0.0050 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Magnesium                               | ND     |           | 0.020  | 0.010  | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Manganese                               | ND     |           | 0.020  | 0.015  | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Nickel                                  | ND     |           | 0.010  | 0.0050 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Selenium                                | ND     |           | 0.010  | 0.0087 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Titanium                                | ND     |           | 0.0050 | 0.0025 | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |
| Zinc                                    | ND     |           | 0.020  | 0.012  | mg/L |   | 06/26/19 17:58 | 06/27/19 12:56                  | 1       |

#### Lab Sample ID: LCS 440-554883/2-A **Matrix: Water**

#### Analysis Batch: 555055

#### **Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** Prep Batch: 554883

| r malyele Batern eeeeee | Spike | LCS    | LCS       |      |   |      | %Rec.    |
|-------------------------|-------|--------|-----------|------|---|------|----------|
| Analyte                 | Added | Result | Qualifier | Unit | D | %Rec | Limits   |
| Aluminum                | 1.00  | 1.02   |           | mg/L |   | 102  | 80 - 120 |
| Arsenic                 | 1.00  | 1.03   |           | mg/L |   | 103  | 80 - 120 |
| Barium                  | 1.00  | 1.02   |           | mg/L |   | 102  | 80 - 120 |
| Boron                   | 1.00  | 1.02   |           | mg/L |   | 102  | 80 - 120 |
| Cadmium                 | 1.00  | 1.02   |           | mg/L |   | 102  | 80 - 120 |
| Chromium                | 1.00  | 1.03   |           | mg/L |   | 103  | 80 - 120 |
| Copper                  | 1.00  | 1.04   |           | mg/L |   | 104  | 80 - 120 |
| Magnesium               | 5.00  | 5.13   |           | mg/L |   | 103  | 80 - 120 |
| Manganese               | 1.00  | 1.03   |           | mg/L |   | 103  | 80 - 120 |
| Nickel                  | 1.00  | 1.02   |           | mg/L |   | 102  | 80 - 120 |
| Selenium                | 1.00  | 0.988  |           | mg/L |   | 99   | 80 - 120 |
| Titanium                | 1.00  | 1.04   |           | mg/L |   | 104  | 80 - 120 |
| Zinc                    | 1.00  | 1.01   |           | mg/L |   | 101  | 80 - 120 |
|                         |       |        |           |      |   |      |          |

#### Lab Sample ID: 440-244629-K-1-B MS ^10 Matrix: Water Analysis Batch: 555055

| Analysis Batch: 555055 | Sample | Sample    | Spike | MS     | MS        |      |   |      | •        | atch: 554883 |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|--------------|
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   |              |
| Aluminum               | ND     | F2        | 1.00  | 1.19   |           | mg/L |   | 119  | 75 - 125 |              |
| Arsenic                | ND     |           | 1.00  | 0.943  |           | mg/L |   | 94   | 75 - 125 |              |

Eurofins TestAmerica, Irvine

**Client Sample ID: Matrix Spike** 

**Prep Type: Total Recoverable** 

**Client Sample ID: Matrix Spike** 

**Prep Type: Total Recoverable** 

# Method: 6010B - Metals (ICP) (Continued)

#### Lab Sample ID: 440-244629-K-1-B MS ^10 Matrix: Water Analysis Batch: 555055

| Analysis Batch: 555055 | Sample | Sample    | Spike | MS     | MS        |      |   |      | Prep Batch: 554883<br>%Rec. |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|-----------------------------|
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits                      |
| Barium                 | 0.056  | J         | 1.00  | 1.02   |           | mg/L |   | 96   | 75 - 125                    |
| Boron                  | 1.7    |           | 1.00  | 2.75   |           | mg/L |   | 102  | 75 - 125                    |
| Cadmium                | ND     |           | 1.00  | 0.968  |           | mg/L |   | 97   | 75 - 125                    |
| Chromium               | ND     |           | 1.00  | 0.982  |           | mg/L |   | 98   | 75 - 125                    |
| Copper                 | 0.065  | J         | 1.00  | 1.07   |           | mg/L |   | 101  | 75 - 125                    |
| Magnesium              | 230    |           | 5.00  | 245    | 4         | mg/L |   | 228  | 75 - 125                    |
| Manganese              | 4.9    |           | 1.00  | 6.04   | 4         | mg/L |   | 117  | 75 - 125                    |
| Nickel                 | ND     |           | 1.00  | 1.03   |           | mg/L |   | 103  | 75 - 125                    |
| Selenium               | ND     |           | 1.00  | 0.982  |           | mg/L |   | 98   | 75 - 125                    |
| Titanium               | ND     |           | 1.00  | 1.11   |           | mg/L |   | 111  | 75 - 125                    |
| Zinc                   | ND     |           | 1.00  | 0.944  |           | mg/L |   | 94   | 75 - 125                    |

# Lab Sample ID: 440-244629-K-1-C MSD ^10 Matrix: Water

#### Client Sample ID: Matrix Spike Duplicate Prep Type: Total Recoverable Prop Batch: 554893

| Analysis Batch: 555055 |        |           |       |        |           |      |   |      | Prep Ba  | atch: 5 | 54883 |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|---------|-------|
|                        | Sample | Sample    | Spike | MSD    | MSD       |      |   |      | %Rec.    |         | RPD   |
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD     | Limit |
| Aluminum               | ND     | F2        | 1.00  | 0.919  | J F2      | mg/L |   | 92   | 75 - 125 | 26      | 20    |
| Arsenic                | ND     |           | 1.00  | 1.08   |           | mg/L |   | 108  | 75 - 125 | 13      | 20    |
| Barium                 | 0.056  | J         | 1.00  | 1.09   |           | mg/L |   | 103  | 75 - 125 | 7       | 20    |
| Boron                  | 1.7    |           | 1.00  | 2.81   |           | mg/L |   | 108  | 75 - 125 | 2       | 20    |
| Cadmium                | ND     |           | 1.00  | 1.03   |           | mg/L |   | 103  | 75 - 125 | 6       | 20    |
| Chromium               | ND     |           | 1.00  | 1.05   |           | mg/L |   | 105  | 75 - 125 | 7       | 20    |
| Copper                 | 0.065  | J         | 1.00  | 1.14   |           | mg/L |   | 107  | 75 - 125 | 6       | 20    |
| Magnesium              | 230    |           | 5.00  | 246    | 4         | mg/L |   | 248  | 75 - 125 | 0       | 20    |
| Manganese              | 4.9    |           | 1.00  | 6.06   | 4         | mg/L |   | 119  | 75 - 125 | 0       | 20    |
| Nickel                 | ND     |           | 1.00  | 1.09   |           | mg/L |   | 109  | 75 - 125 | 6       | 20    |
| Selenium               | ND     |           | 1.00  | 1.05   |           | mg/L |   | 105  | 75 - 125 | 7       | 20    |
| Titanium               | ND     |           | 1.00  | 1.08   |           | mg/L |   | 108  | 75 - 125 | 3       | 20    |
| Zinc                   | ND     |           | 1.00  | 1.01   |           | mg/L |   | 101  | 75 - 125 | 6       | 20    |

#### Lab Sample ID: MB 440-556202/1-A Matrix: Water Analysis Batch: 556398

|           | MB     | MB        |        |        |      |   |                |                |         |
|-----------|--------|-----------|--------|--------|------|---|----------------|----------------|---------|
| Analyte   | Result | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Aluminum  | ND     |           | 0.10   | 0.050  | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Arsenic   | ND     |           | 0.010  | 0.0089 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Barium    | ND     |           | 0.010  | 0.0050 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Boron     | ND     |           | 0.050  | 0.025  | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Cadmium   | ND     |           | 0.0050 | 0.0025 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Chromium  | ND     |           | 0.0050 | 0.0025 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Copper    | ND     |           | 0.010  | 0.0050 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Magnesium | ND     |           | 0.020  | 0.010  | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Manganese | ND     |           | 0.020  | 0.015  | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Nickel    | ND     |           | 0.010  | 0.0050 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Selenium  | ND     |           | 0.010  | 0.0087 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Titanium  | ND     |           | 0.0050 | 0.0025 | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |
| Zinc      | ND     |           | 0.020  | 0.012  | mg/L |   | 07/05/19 09:49 | 07/05/19 18:57 | 1       |

# Eurofins TestAmerica, Irvine

**Client Sample ID: Method Blank** 

**Prep Type: Total Recoverable** 

Prep Batch: 556202

**Client Sample ID: Lab Control Sample** 

Prep Type: Total Recoverable

# Method: 6010B - Metals (ICP) (Continued)

| Lab Sample ID: LCS 440-556202/2-A |
|-----------------------------------|
| Matrix: Water                     |
| Analysis Batch: 556398            |

| Analysis Batch: 556398 | Spike | LCS   | LCS       |      |   |      | Prep Batch: 556202<br>%Rec. |
|------------------------|-------|-------|-----------|------|---|------|-----------------------------|
| Analyte                | Added |       | Qualifier | Unit | D | %Rec | Limits                      |
| Aluminum               | 1.00  | 0.983 |           | mg/L |   | 98   | 80 - 120                    |
| Arsenic                | 1.00  | 0.980 |           | mg/L |   | 98   | 80 - 120                    |
| Barium                 | 1.00  | 0.980 |           | mg/L |   | 98   | 80 - 120                    |
| Boron                  | 1.00  | 0.975 |           | mg/L |   | 98   | 80 - 120                    |
| Cadmium                | 1.00  | 0.985 |           | mg/L |   | 98   | 80 - 120                    |
| Chromium               | 1.00  | 0.986 |           | mg/L |   | 99   | 80 - 120                    |
| Copper                 | 1.00  | 0.993 |           | mg/L |   | 99   | 80 - 120                    |
| Magnesium              | 5.00  | 4.87  |           | mg/L |   | 97   | 80 - 120                    |
| Manganese              | 1.00  | 0.983 |           | mg/L |   | 98   | 80 - 120                    |
| Nickel                 | 1.00  | 0.980 |           | mg/L |   | 98   | 80 - 120                    |
| Selenium               | 1.00  | 0.950 |           | mg/L |   | 95   | 80 - 120                    |
| Titanium               | 1.00  | 0.991 |           | mg/L |   | 99   | 80 - 120                    |
| Zinc                   | 1.00  | 0.989 |           | mg/L |   | 99   | 80 - 120                    |

#### Lab Sample ID: 440-244965-Y-1-B MS Matrix: Water Analysis Batch: 556398

| Analysis Baten. 000000 | Sample | Sample    | Spike | MS     | MS        |      |   |      | %Rec.    |  |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|--|
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   |  |
| Aluminum               | ND     |           | 1.00  | 1.10   |           | mg/L |   | 110  | 75 - 125 |  |
| Arsenic                | ND     |           | 1.00  | 1.06   |           | mg/L |   | 106  | 75 - 125 |  |
| Barium                 | 0.080  |           | 1.00  | 1.05   |           | mg/L |   | 97   | 75 - 125 |  |
| Boron                  | 0.15   |           | 1.00  | 1.21   |           | mg/L |   | 106  | 75 - 125 |  |
| Cadmium                | ND     |           | 1.00  | 0.990  |           | mg/L |   | 99   | 75 - 125 |  |
| Chromium               | ND     |           | 1.00  | 1.02   |           | mg/L |   | 102  | 75 - 125 |  |
| Copper                 | ND     |           | 1.00  | 1.05   |           | mg/L |   | 105  | 75 - 125 |  |
| Magnesium              | 37     |           | 5.00  | 41.9   | 4         | mg/L |   | 102  | 75 - 125 |  |
| Manganese              | 0.26   |           | 1.00  | 1.27   |           | mg/L |   | 101  | 75 - 125 |  |
| Nickel                 | ND     |           | 1.00  | 0.967  |           | mg/L |   | 97   | 75 - 125 |  |
| Selenium               | ND     |           | 1.00  | 0.999  |           | mg/L |   | 100  | 75 - 125 |  |
| Titanium               | 0.0025 | J         | 1.00  | 1.04   |           | mg/L |   | 104  | 75 - 125 |  |
| Zinc                   | ND     |           | 1.00  | 0.976  |           | mg/L |   | 98   | 75 - 125 |  |

# Lab Sample ID: 440-244965-Y-1-C MSD Matrix: Water

| Analysis Batch: 556398 |        |           |       |        |           |      |   |      | Prep Ba  | atch: 5 | 56202 |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|---------|-------|
|                        | Sample | Sample    | Spike | MSD    | MSD       |      |   |      | %Rec.    |         | RPD   |
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD     | Limit |
| Aluminum               | ND     |           | 1.00  | 1.10   |           | mg/L |   | 110  | 75 - 125 | 0       | 20    |
| Arsenic                | ND     |           | 1.00  | 1.06   |           | mg/L |   | 106  | 75 - 125 | 0       | 20    |
| Barium                 | 0.080  |           | 1.00  | 1.05   |           | mg/L |   | 97   | 75 - 125 | 0       | 20    |
| Boron                  | 0.15   |           | 1.00  | 1.19   |           | mg/L |   | 104  | 75 - 125 | 1       | 20    |
| Cadmium                | ND     |           | 1.00  | 0.983  |           | mg/L |   | 98   | 75 - 125 | 1       | 20    |
| Chromium               | ND     |           | 1.00  | 1.01   |           | mg/L |   | 101  | 75 - 125 | 0       | 20    |
| Copper                 | ND     |           | 1.00  | 1.05   |           | mg/L |   | 105  | 75 - 125 | 0       | 20    |
| Magnesium              | 37     |           | 5.00  | 41.0   | 4         | mg/L |   | 85   | 75 - 125 | 2       | 20    |
| Manganese              | 0.26   |           | 1.00  | 1.26   |           | mg/L |   | 99   | 75 - 125 | 1       | 20    |
| Nickel                 | ND     |           | 1.00  | 0.960  |           | mg/L |   | 96   | 75 - 125 | 1       | 20    |
| Selenium               | ND     |           | 1.00  | 1.00   |           | mg/L |   | 100  | 75 - 125 | 0       | 20    |

Eurofins TestAmerica, Irvine

# Client Sample ID: Matrix Spike Prep Type: Total Recoverable

Client Sample ID: Matrix Spike Duplicate

**Prep Type: Total Recoverable** 

Prep Batch: 556202

# **QC Sample Results**

Job ID: 440-244608-1

# Method: 6010B - Metals (ICP) (Continued)

| Lab Sample ID: 440-244965<br>Matrix: Water | 5-Y-1-C MS | D         |       |        |           | Client Sample ID: Matrix Spike Du<br>Prep Type: Total Recov |      |             |            |         |       |  |
|--|------------|-----------|-------|--------|-----------|---|------|-------------|------------|---------|-------|--|
| Analysis Batch: 556398                     | 0          | 0         | 0     |        |           |   |      |             | Prep Ba    | atch: 5 |       |  |
| • • •                                      | •          | Sample    | Spike |        | MSD       |   | _    | a/ <b>5</b> | %Rec.      |         | RPD   |  |
| Analyte                                    | Result     | Qualifier | Added | Result | Qualifier | Unit  | D    | %Rec        | Limits     | RPD     | Limit |  |
| Titanium                                   | 0.0025     | J         | 1.00  | 1.02   |           | mg/L  |      | 102         | 75 - 125   | 2       | 20    |  |
| Zinc                                       | ND         |           | 1.00  | 0.971  |           | mg/L  |      | 97          | 75 - 125   | 1       | 20    |  |
| lethod: 7470A - Mercu                      | ry (CVAA   | <b>()</b> |       |        |           |   |      |             |            |         |       |  |
| Lab Sample ID: MB 440-55                   | 5647/1-A   |           |       |        |           |   | Clie | ent San     | nple ID: M |         |       |  |
| Matrix: Water                              |            |           |       |        |           |   |      |             | Prep Ty    | pe: Tot | al/NA |  |
| Analysis Batch: 555834                     |            |           |       |        |           |   |      |             | Prep Ba    | atch: 5 | 55647 |  |

| -                           | MB     | МВ        |         |         |      |       |                |                |         |
|-----------------------------|--------|-----------|---------|---------|------|-------|----------------|----------------|---------|
| Analyte                     | Result | Qualifier | RL      | MDL     | Unit | D     | Prepared       | Analyzed       | Dil Fac |
| Mercury                     | ND     |           | 0.00020 | 0.00010 | mg/L |       | 07/01/19 16:27 | 07/02/19 12:06 | 1       |
| Lab Sample ID: LCS 440-5556 | 47/2-A |           |         |         |      | Clien | t Sample ID:   | Lab Control S  | Sample  |
| Matrix: Water               |        |           |         |         |      |       |                | Prep Type: To  | otal/NA |
| Analysia Potaby 555924      |        |           |         |         |      |       |                | Drop Potoby    | EEEC A7 |

| Analysis Datch. 555054 |         |         |           |      |   |      | гіер ве  | atch. 555047 |   |
|------------------------|---------|---------|-----------|------|---|------|----------|--------------|---|
|                        | Spike   | LCS     | LCS       |      |   |      | %Rec.    |              | ī |
| Analyte                | Added   | Result  | Qualifier | Unit | D | %Rec | Limits   |              |   |
| Mercury                | 0.00400 | 0.00440 |           | mg/L |   | 110  | 80 - 120 |              | ī |
|                        |         |         |           |      |   |      |          |              |   |

| Lab Sample ID: 720-93762- | A-1-G MSC | )         |         |         |           | Client | Samp | le ID: N | Aatrix Spil | ke Dup  | licate |
|---------------------------|-----------|-----------|---------|---------|-----------|--------|------|----------|-------------|---------|--------|
| Matrix: Water             |           |           |         |         |           |        |      |          | Prep Ty     | pe: Tot | al/NA  |
| Analysis Batch: 555834    |           |           |         |         |           |        |      |          | Prep Ba     | atch: 5 | 55647  |
| -                         | Sample    | Sample    | Spike   | MSD     | MSD       |        |      |          | %Rec.       |         | RPD    |
| Analyte                   | Result    | Qualifier | Added   | Result  | Qualifier | Unit   | D    | %Rec     | Limits      | RPD     | Limit  |
| Mercury                   | ND        |           | 0.00400 | 0.00433 |           | mg/L   |      | 108      | 75 - 125    | 0       | 20     |

# Method: 1664A - HEM and SGT-HEM

| <br>Lab Sample ID: MB 440-55528 | 32/1-A   |           |       |     |        |      |      |          | C     | Clie | nt Samp    | ole ID: Method       | d Blank |
|---------------------------------|----------|-----------|-------|-----|--------|------|------|----------|-------|------|------------|----------------------|---------|
| Matrix: Water                   |          |           |       |     |        |      |      |          |       |      |            | Prep Type: T         | otal/NA |
| Analysis Batch: 555325          |          |           |       |     |        |      |      |          |       |      |            | Prep Batch:          |         |
|                                 | MB       | MB        |       |     |        |      |      |          |       |      |            |                      |         |
| Analyte                         | Result   | Qualifier |       | RL  |        | MDL  | Unit |          | D     | Pi   | repared    | Analyzed             | Dil Fac |
| HEM                             | ND       |           |       | 5.0 |        | 1.4  | mg/L |          | — c   | )6/2 | 8/19 15:07 | 06/28/19 18:55       | 1       |
| Lab Sample ID: LCS 440-5552     | 282/2-A  |           |       |     |        |      |      | Clie     | ent s | Sar  | nple ID:   | Lab Control          | Sample  |
| Matrix: Water                   | -        |           |       |     |        |      |      |          |       |      |            | Prep Type: T         |         |
| Analysis Batch: 555325          |          |           | Spike |     | LCS    | 1.09 |      |          |       |      |            | Prep Batch:<br>%Rec. |         |
| Analyte                         |          |           | Added |     | Result |      |      | Unit     |       | D    | %Rec       | Limits               |         |
| HEM                             |          |           | 20.0  |     | 19.20  |      |      | mg/L     |       | _    | 96         | 78 - 114             |         |
| Lab Sample ID: LCSD 440-55      | 5282/3-A |           |       |     |        |      | c    | lient Sa | amp   | ole  |            | Control Samp         |         |
| Matrix: Water                   |          |           |       |     |        |      |      |          |       |      |            | Prep Type: T         |         |
| Analysis Batch: 555325          |          |           |       |     |        |      |      |          |       |      |            | Prep Batch:          | 555282  |

| Analysis Batch: 555325 |       |        |           |      |   |      | Prep Ba  | itch: 55 | 55282 |  |
|------------------------|-------|--------|-----------|------|---|------|----------|----------|-------|--|
|                        | Spike | LCSD   | LCSD      |      |   |      | %Rec.    |          | RPD   |  |
| Analyte                | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD      | Limit |  |
| HEM                    | 20.0  | 19.70  |           | mg/L |   | 99   | 78 - 114 | 3        | 11    |  |

# **QC Sample Results**

Job ID: 440-244608-1

# Method: 2540E - Solids, Volatile and Fixed (VS)

| Lab Sample ID: MB 440-5548<br>Matrix: Water   | 94/1                   |                       |           |   |      |  |                        |                  |                      | (        | Clie     | nt Sam                                     | ole ID: M<br>Prep Ty   |   |   |
|---|------------------------|-----------------------|-----------|---|------|--|------------------------|------------------|----------------------|----------|----------|--|--|---|---|
| Analysis Batch: 554894  |                        |                       |           |   |      |  |                        |                  |                      |          |          |  |  |   |   |
|   | _                      |                       | MB        |   |      |  |                        |                  |                      | _        | _        | _  |  |   |   |
| Analyte   | Re                     |                       | Qualifier |   | RL   |  |                        | Unit             |                      | D        | P        | repared                                    | Analyz   |   | Dil   |
| Total Volatile Solids   |                        | ND                    |           |   | 10   |  | 10                     | mg/L             |                      |          |          |  | 06/26/19   | 19:05   |   |
| Lab Sample ID: 440-244608-1<br>Matrix: Water  | DU                     |                       |           |   |      |  |                        |                  |                      | CI       | ien      | t Sample                                   | e ID: 062<br>Prep Ty   |   |   |
| Analysis Batch: 554894  |                        |                       |           |   |      |  |                        |                  |                      |          |          |  |  |   |   |
|   | Sample                 |                       | -         |   |      |  | DU                     |                  |                      |          |          |  |  |   | F   |
| Analyte   | Result                 | Qua                   | lifier    |   |      | Result                                 | Qua                    | lifier           | Unit                 |          | D        |  |  | RPD   |   |
| Total Volatile Solids   | 12000                  |                       |           |   |      | 13500                                  |                        |                  | mg/L                 |          |          |  |  | 10  |   |
| lethod: 351.2 - Nitrogen,   | , Total P              | <b>(</b> jel          | dahl      |   |      |  |                        |                  |                      |          |          |  |  |   |   |
| Lab Sample ID: MB 440-5552  | 67/3-A                 |                       |           |   |      |  |                        |                  |                      |          | Clie     | nt Sam                                     | ole ID: M  |   |   |
| Matrix: Water   |                        |                       |           |   |      |  |                        |                  |                      |          |          |  | Prep Ty  |   |   |
| Analysis Batch: 555602  |                        | MR                    | мв        |   |      |  |                        |                  |                      |          |          |  | Prep Ba  |   | )552  |
| Analyte   | Po                     |                       | Qualifier |   | RL   |  | וחא                    | Unit             |                      | D        | D        | repared                                    | Analyz   | red   | Dil   |
| Total Kjeldahl Nitrogen   |                        | ND                    | auannei   |   | 0.20 |  |                        | mg/L             |                      |          |          | 8/19 14:14                                 | -  |   |   |
| rotal Njoldali Mitogoli   |                        | ND                    |           |   | 0.20 |  | 0.10                   | iiig/L           |                      |          | 00/2     | 0/10 14.14                                 | 00/20/10   | 20.02   |   |
| Lab Sample ID: LCS 440-555  | 267/4-A                |                       |           |   |      |  |                        |                  | Cli                  | ent      | Sar      | nple ID:                                   | Lab Cor  | trol S  | am  |
| Matrix: Water   |                        |                       |           |   |      |  |                        |                  |                      |          |          |  | Prep Ty  | pe: To  | otal/   |
| Analysis Batch: 555602  |                        |                       |           |   |      |  |                        |                  |                      |          |          |  | Prep Ba  | tch:  | 5552  |
|   |                        |                       |           | Spike                                   |      | LCS                                    | LCS                    | ;                |                      |          |          |  | %Rec.  |   |   |
| Analyte   |                        |                       |           | Added                                   |      | Result                                 | Qua                    | lifier           | Unit                 |          | D        | %Rec                                       | Limits   |   |   |
| Total Kjeldahl Nitrogen   |                        |                       |           | 5.00                                    |      | 4.85                                   |                        |                  | mg/L                 |          |          | 97   | 90 - 110   |   |   |
| Lab Sample ID: LCSD 440-55  | 5267/5-A               |                       |           |   |      |  |                        | С                | lient S              | am       | ple      | ID: Lab                                    | Control  |   |   |
| Matrix: Water   |                        |                       |           |   |      |  |                        |                  |                      |          |          |  | Prep Ty  | oe: To  | )tal/   |
| Analysis Batch: 555602  |                        |                       |           |   |      |  |                        |                  |                      |          |          |  |  |   |   |
|   |                        |                       |           | 0                                       |      | 1.000                                  |                        |                  |                      |          |          |  | Prep Ba  |   | 5552  |
| Analyta   |                        |                       |           | Spike                                   |      | LCSD                                   |                        |                  | Unit                 |          | P        | % Boo                                      | %Rec.  | itch:   | 5552<br>F   |
| · · · · · · · · · · · · · · · · · · ·   |                        |                       |           | Added                                   |      | Result                                 |                        |                  | Unit                 |          | D        | %Rec                                       | %Rec.<br>Limits  | RPD   | 5 <b>552</b><br>F   |
| •   |                        |                       |           | •                                       |      | -                                      |                        |                  | Unit<br>mg/L         |          | <b>D</b> | <b>%Rec</b>                                | %Rec.  | itch:   | 5 <b>552</b><br>F   |
| Total Kjeldahl Nitrogen   | (-1-B MS               |                       |           | Added                                   |      | Result                                 |                        |                  |                      |          | _        | 98   | %Rec.<br>Limits<br>90 - 110  | RPD   | 5552<br>F   |
| Total Kjeldahl Nitrogen Lab Sample ID: 440-244619-4   | (-1-B MS               |                       |           | Added                                   |      | Result                                 |                        |                  |                      |          | _        | 98<br>ient San                             | %Rec.<br>Limits<br>90 - 110  | RPD<br>1<br>1<br>Watrix                             | 5552<br>F<br>L<br>Sp  |
| Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P<br>Matrix: Water   | (-1-B MS               |                       |           | Added                                   |      | Result                                 |                        |                  |                      |          | _        | 98<br>ient San                             | %Rec.<br>Limits<br>90 - 110<br>nple ID: I<br>Prep Ty   | Natrix<br>pe: To                                    | 5552<br>F<br>L<br>Sp<br>otal/   |
| Matrix: Water   | C-1-B MS<br>Sample     |                       | <br>1ple  | Added                                   |      | Result<br>4.88                         |                        |                  |                      |          | _        | 98<br>ient San                             | %Rec.<br>Limits<br>90 - 110  | Natrix<br>pe: To                                    | 5552<br>F<br>L<br>Sp<br>otal/   |
| Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P<br>Matrix: Water   |                        | Sam                   |           | Added<br>5.00                           |      | Result<br>4.88                         | Qua                    | lifier           |                      |          | CI       | 98<br>ient San                             | %Rec.<br>Limits<br>90 - 110<br>nple ID: I<br>Prep Typ<br>Prep Ba   | Natrix<br>pe: To                                    | 5552<br>F<br>L<br>Sp<br>otal/   |
| Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-k<br>Matrix: Water<br>Analysis Batch: 555602<br>Analyte  | Sample                 | Sam<br>Qua            |           | Added<br>5.00<br>Spike                  |      | Result<br>4.88<br>MS                   | Qua<br>MS<br>Qua       | lifier           | mg/L                 |          | CI       | 98<br>ient San                             | %Rec.<br>Limits<br>90 - 110<br>Prep Ty<br>Prep Ba<br>%Rec.   | Natrix<br>pe: To                                    | 5552<br>F<br>L<br>Sp<br>otal/   |
| Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-F<br>Matrix: Water<br>Analysis Batch: 555602<br>Analyte<br>Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-F                  | Sample<br>Result<br>ND | Sam<br>Qua<br>F1      |           | Added<br>5.00<br>Spike<br>Added         |      | Result<br>4.88<br>MS<br>Result         | Qua<br>MS<br>Qua       | lifier           | mg/L<br>Unit<br>mg/L | t Sa     | CI       | <u>98</u><br>ient San<br><u>%Rec</u><br>46 | %Rec.<br>Limits<br>90-110<br>Prep ID: I<br>Prep Typ<br>Prep Ba<br>%Rec.<br>Limits<br>90-110<br>atrix Spil        | Matrix<br>PD<br>Matrix<br>pe: To<br>tch: (<br>ce Du | 5552<br>F<br>L<br>Sp<br>otal/<br>5552                                 |
| Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P<br>Matrix: Water<br>Analysis Batch: 555602<br>Analyte<br>Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P<br>Matrix: Water | Sample<br>Result<br>ND | Sam<br>Qua<br>F1      |           | Added<br>5.00<br>Spike<br>Added         |      | Result<br>4.88<br>MS<br>Result         | Qua<br>MS<br>Qua       | lifier           | mg/L<br>Unit<br>mg/L | <br>t Sa | CI       | <u>98</u><br>ient San<br><u>%Rec</u><br>46 | %Rec.<br>Limits<br>90-110<br>Prep Ty<br>Prep Ba<br>%Rec.<br>Limits<br>90-110<br>atrix Spil<br>Prep Ty            | Matrix<br>pe: To<br>tch: {<br>ce Du<br>pe: To       | 55522<br>F<br>L<br>Sp<br>tal/<br>55522<br>plic:<br>ptal/              |
| Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P<br>Matrix: Water<br>Analysis Batch: 555602<br>Analyte<br>Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P<br>Matrix: Water | Sample<br>Result<br>ND | San<br>Qua<br>F1      | lifier    | Added<br>5.00<br>Spike<br>Added<br>5.00 |      | Result<br>4.88<br>MS<br>Result<br>2.31 | Qua<br>MS<br>Qua<br>F1 | lifier           | mg/L<br>Unit<br>mg/L | t Sa     | CI       | <u>98</u><br>ient San<br><u>%Rec</u><br>46 | %Rec.<br>Limits<br>90-110<br>Prep Ty<br>Prep Ba<br>%Rec.<br>Limits<br>90-110<br>atrix Spil<br>Prep Ty<br>Prep Ba | Matrix<br>pe: To<br>tch: {<br>ce Du<br>pe: To       | 55552<br>F<br>L<br>Sp<br>otal/<br>55552<br>plic:<br>otal/             |
| Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P<br>Matrix: Water<br>Analysis Batch: 555602<br>Analyte<br>Total Kjeldahl Nitrogen<br>Lab Sample ID: 440-244619-P                  | Sample<br>Result<br>ND | Sam<br>Qua<br>F1<br>D | lifier    | Added<br>5.00<br>Spike<br>Added         |      | Result<br>4.88<br>MS<br>Result         | Qua<br>MS<br>Qua<br>F1 | lifier<br>lifier | mg/L<br>Unit<br>mg/L | t Sa     | CI       | <u>98</u><br>ient San<br><u>%Rec</u><br>46 | %Rec.<br>Limits<br>90-110<br>Prep Ty<br>Prep Ba<br>%Rec.<br>Limits<br>90-110<br>atrix Spil<br>Prep Ty            | Matrix<br>pe: To<br>tch: {<br>ce Du<br>pe: To       | 55522<br>F<br>L<br>Sp<br>tal/<br>55522<br>Plica<br>tal/<br>55522<br>F |

Job ID: 440-244608-1

# Method: 353.2 - Nitrogen, Nitrate-Nitrite

| Lab Sample ID: MB 320-306<br>Matrix: Water   | 38 <mark>26/15</mark>                   |                          |                                  |                        |                  |          | Clie                | nt Samp   | ole ID: Metho<br>Prep Type: T  |   |
|--|---|--------------------------|----------------------------------|------------------------|------------------|----------|---------------------|---|--|---|
| Analysis Batch: 306826   |   |                          |                                  |                        |                  |          |                     |   |  | •••••   |
|  |   | MB MB                    |                                  |                        |                  |          |                     |   |  |   |
| Analyte  | Re                                      | sult Qualifier           | RL                               |                        | MDL Unit         | D        | P                   | repared   | Analyzed   | Dil Fac   |
| Nitrate Nitrite as N   |   | ND                       | 0.050                            | 0.0                    | 0031 mg/L        |          |                     |   | 07/10/19 10:35   | 1   |
| Lab Sample ID: LCS 320-30  | )6826/16                                |                          |                                  |                        |                  | Clien    | t Sar               | nple ID:  | Lab Control  | Sample  |
| Matrix: Water  |   |                          |                                  |                        |                  |          |                     |   | Prep Type: T   |   |
| Analysis Batch: 306826   |   |                          |                                  |                        |                  |          |                     |   |  |   |
|  |   |                          | Spike                            | LCS                    | LCS              |          |                     |   | %Rec.  |   |
| Analyte  |   |                          | Added                            | Result                 | Qualifier        | Unit     | D                   | %Rec  | Limits   |   |
| Nitrate Nitrite as N   |   |                          | 1.00                             | 1.02                   |                  | mg/L     |                     | 102   | 90 - 110   |   |
| Lab Sample ID: 440-244710  | )-A-1 MS                                |                          |                                  |                        |                  |          | CI                  | ient San  | nple ID: Matri   | x Spik  |
| Matrix: Water  |   |                          |                                  |                        |                  |          |                     |   | Prep Type: T   | -   |
| Analysis Batch: 306826   |   |                          |                                  |                        |                  |          |                     |   | Trop Type. I   |   |
| Analysis Baten. 000020   | Sample                                  | Sample                   | Spike                            | MS                     | MS               |          |                     |   | %Rec.  |   |
| Analyte  | •                                       | Qualifier                | Added                            | -                      | Qualifier        | Unit     | D                   | %Rec  | Limits   |   |
| Nitrate Nitrite as N   | 0.19                                    |                          | 1.00                             | 1.23                   |                  | mg/L     |                     | 104   | 90 - 110   |   |
| Lab Sample ID: 440-244710<br>Matrix: Water<br>Analysis Batch: 306826   |   |                          |                                  |                        |                  | Client S | amp                 | le ID: Ma   | atrix Spike Du<br>Prep Type: T   |   |
|  | Sample                                  | Sample                   | Spike                            | MSD                    | MSD              |          |                     |   | %Rec.  | RPE   |
| Analyte  |   | Qualifier                | Added                            |                        | Qualifier        | Unit     | D                   | %Rec  | Limits RP  |   |
| Nitrate Nitrite as N   | 0.19                                    |                          | 1.00                             | 1.19                   |                  | mg/L     |                     | 100   | 90 - 110   | 4 20  |
| Method: 365.3 - Phosph   | orus, To                                | tal                      |                                  |                        |                  |          |                     |   |  |   |
|  |   |                          |                                  |                        |                  |          |                     |   |  |   |
| _  | 5362/1-A                                |                          |                                  |                        |                  |          | Clie                | nt Sam  | ole ID: Metho  | d Blanl   |
| Lab Sample ID: MB 440-555<br>Matrix: Water   | 5362/1-A                                |                          |                                  |                        |                  |          | Clie                | nt Samp   | ole ID: Metho<br>Prep Type: T  |   |
| Lab Sample ID: MB 440-555<br>Matrix: Water   | 5362/1-A                                |                          |                                  |                        |                  |          | Clie                | ent Samp  | Prep Type: T   | otal/NA   |
| Lab Sample ID: MB 440-555  | 5362/1-A                                | МВ МВ                    |                                  |                        |                  |          | Clie                | nt Samp   |  | otal/NA   |
| Lab Sample ID: MB 440-555<br>Matrix: Water   |   | MB MB<br>esult Qualifier | RL                               |                        | MDL Unit         | D        |                     | ent Samp  | Prep Type: T   | otal/NA<br>555362   |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384   |   |                          |                                  |                        | MDL Unit         | D        | P                   |   | Prep Type: T<br>Prep Batch:<br>Analyzed  | otal/NA<br>555362<br>Dil Fac  |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte  | Re                                      | sult Qualifier           |                                  |                        |                  |          | <b>P</b> 1<br>06/2  | repared<br>9/19 08:17                                     | Prep Type: T<br>Prep Batch:<br>Analyzed  | otal/NA<br>555362<br>Dil Fac  |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total   | Re                                      | sult Qualifier           |                                  |                        |                  |          | <b>P</b> 1<br>06/2  | repared<br>9/19 08:17<br>nple ID:                         | Prep Type: T<br>Prep Batch:<br>Analyzed<br>06/29/19 10:47<br>Lab Control   | otal/NA<br>555362<br>Dil Fac<br>Sample  |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water   | Re                                      | sult Qualifier           |                                  |                        |                  |          | <b>P</b> 1<br>06/2  | repared<br>9/19 08:17<br>nple ID:                         | Prep Type: T<br>Prep Batch:<br>Analyzed<br>06/29/19 10:47<br>Lab Control<br>Prep Type: T   | otal/NA<br>555362<br>Dil Fac<br>Sample<br>otal/NA                                 |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55  | Re                                      | sult Qualifier           |                                  | 0                      |                  |          | <b>P</b> 1<br>06/2  | repared<br>9/19 08:17<br>nple ID:                         | Prep Type: T<br>Prep Batch:<br>Analyzed<br>06/29/19 10:47<br>Lab Control   | otal/NA<br>555362<br>Dil Fac<br>Sample<br>otal/NA                                 |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water   | Re                                      | sult Qualifier           | 0.050                            | LCS                    | 1.025 mg/L       |          | Pr<br>06/2<br>t Sar | repared<br>9/19 08:17<br>nple ID:                         | Prep Type: T<br>Prep Batch:<br>Analyzed<br>06/29/19 10:47<br>Lab Control<br>Prep Type: T<br>Prep Batch:  | otal/N/<br>555362<br>Dil Fa<br>Sample<br>otal/N/                                  |
| Lab Sample ID: MB 440-558<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 555384   | Re                                      | sult Qualifier           | 0.050                            | LCS                    | 0.025 mg/L       | Clien    | Pr<br>06/2<br>t Sar | repared<br>9/19 08:17<br>nple ID:                         | Prep Type: T<br>Prep Batch:<br>06/29/19 10:47<br>Lab Control<br>Prep Type: T<br>Prep Batch:<br>%Rec.   | otal/NA<br>555362<br>Dil Fac<br>Sample<br>otal/NA                                 |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total   | Re<br>55362/2-A                         | ND Qualifier             | Spike<br>Added                   | LCS<br>Result          | 0.025 mg/L       | Clien    | Pi<br>06/2<br>t Sar | repared<br>9/19 08:17<br>nple ID:<br><u>%Rec</u><br>100 - | Prep Type: T<br>Prep Batch:<br>06/29/19 10:47<br>Lab Control<br>Prep Type: T<br>Prep Batch:<br>%Rec.<br>Limits<br>80 - 120   | otal/N/<br>555362<br>Dil Fa<br>Sample<br>otal/N/<br>555362                        |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: 440-244457                  | Re<br>55362/2-A                         | ND Qualifier             | Spike<br>Added                   | LCS<br>Result          | 0.025 mg/L       | Clien    | Pi<br>06/2<br>t Sar | repared<br>9/19 08:17<br>nple ID:<br><u>%Rec</u><br>100 - | Prep Type: T<br>Prep Batch:<br>06/29/19 10:47<br>Lab Control<br>Prep Type: T<br>Prep Batch:<br>%Rec.<br>Limits<br>80 - 120   | otal/N/<br>555362<br>Dil Fa<br>Sample<br>otal/N/<br>555362<br>x Spike             |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: 440-244457<br>Matrix: Water | Re<br>55362/2-A                         | ND Qualifier             | Spike<br>Added                   | LCS<br>Result          | 0.025 mg/L       | Clien    | Pi<br>06/2<br>t Sar | repared<br>9/19 08:17<br>nple ID:<br><u>%Rec</u><br>100 - | Prep Type: T<br>Prep Batch:<br>06/29/19 10:47<br>Lab Control<br>Prep Type: T<br>Prep Batch:<br>%Rec.<br>Limits<br>80 - 120<br>nple ID: Matri<br>Prep Type: T                                   | otal/NA<br>555362<br>Dil Fac<br>Sample<br>otal/NA<br>555362<br>x Spike<br>otal/NA |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: 440-244457                  | Re<br>55362/2-A<br>7-B-1-B MS           | ND Qualifier             | 0.050<br>Spike<br>Added<br>0.501 | LCS<br>Result<br>0.502 | LCS<br>Qualifier | Clien    | Pi<br>06/2<br>t Sar | repared<br>9/19 08:17<br>nple ID:<br><u>%Rec</u><br>100 - | Prep Type: T<br>Prep Batch:<br><u>Analyzed</u><br>06/29/19 10:47<br>Lab Control<br>Prep Type: T<br>Prep Batch:<br>%Rec.<br>Limits<br>80 - 120<br>nple ID: Matri<br>Prep Type: T<br>Prep Batch: | otal/NA<br>555362<br>Dil Fac<br>Sample<br>otal/NA<br>555362<br>x Spike<br>otal/NA |
| Lab Sample ID: MB 440-555<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 555384<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: 440-244457<br>Matrix: Water | Re<br>55362/2-A<br>7-B-1-B MS<br>Sample | ND Qualifier             | Spike<br>Added                   | LCS<br>Result<br>0.502 | 0.025 mg/L       | Clien    | Pi<br>06/2<br>t Sar | repared<br>9/19 08:17<br>nple ID:<br><u>%Rec</u><br>100 - | Prep Type: T<br>Prep Batch:<br>06/29/19 10:47<br>Lab Control<br>Prep Type: T<br>Prep Batch:<br>%Rec.<br>Limits<br>80 - 120<br>nple ID: Matri<br>Prep Type: T                                   | otal/NA<br>555362<br>Dil Fac<br>Sample<br>otal/NA<br>555362<br>x Spike<br>otal/NA |

Job ID: 440-244608-1

# Method: 365.3 - Phosphorus, Total (Continued)

| Lab Sample ID: 440-24445 | 7-B-1-C MS | D         |       |        |           | Client | Samp | le ID: N | latrix Spil | ke Dup  | licate |
|--------------------------|------------|-----------|-------|--------|-----------|--------|------|----------|-------------|---------|--------|
| Matrix: Water            |            |           |       |        |           |        |      |          | Prep Ty     | pe: Tot | al/NA  |
| Analysis Batch: 555384   |            |           |       |        |           |        |      |          | Prep Ba     | atch: 5 | 55362  |
|                          | Sample     | Sample    | Spike | MSD    | MSD       |        |      |          | %Rec.       |         | RPD    |
| Analyte                  | Result     | Qualifier | Added | Result | Qualifier | Unit   | D    | %Rec     | Limits      | RPD     | Limit  |
| Phosphorus, Total        | 0.15       | F1        | 0.501 | 0.217  | F1        | mg/L   |      | 13       | 75 - 125    | 4       | 20     |

# Method: 420.1 - Phenolics, Total Recoverable

| Lab Sample ID: MB 680-576  | 470/1-A                              |            |             |                       |       |        |              | (    | Clie          | nt Samp     | ole ID: Met                                       | thod   | Blank           |
|--|--------------------------------------|------------|-------------|-----------------------|-------|--------|--------------|------|---------------|-------------|---|--------|-----------------|
| Matrix: Water  |                                      |            |             |                       |       |        |              |      |               |             | Prep Type   | e: Tot | tal/NA          |
| Analysis Batch: 576857   |                                      |            |             |                       |       |        |              |      |               |             | Prep Bat  |        |                 |
| -  |                                      | MB MB      |             |                       |       |        |              |      |               |             |   |        |                 |
| Analyte  | Re                                   | sult Quali | fier        | RL                    | MDL   | Unit   |              | D    | Pr            | repared     | Analyze   | d      | Dil Fac         |
| Phenolics, Total Recoverable   |                                      | ND         | 0.          | .050                  | 0.025 | mg/L   |              | _ (  | 07/0 <i>°</i> | 1/19 10:02  | 07/02/19 10                                       | 0:49   |                 |
| Lab Sample ID: LCS 680-576   | 6470/2-A                             |            |             |                       |       |        | Clie         | ent  | San           | nple ID:    | Lab Cont  | rol Sa | ample           |
| Matrix: Water  |                                      |            |             |                       |       |        |              |      |               |             | Prep Type   |        |                 |
| Analysis Batch: 576857   |                                      |            |             |                       |       |        |              |      |               |             | Prep Bat  |        |                 |
| •  |                                      |            | Spike       | LCS                   | LCS   |        |              |      |               |             | %Rec.   |        |                 |
| Analyte  |                                      |            | Added       | Result                | Qua   | lifier | Unit         |      | D             | %Rec        | Limits  |        |                 |
| Phenolics, Total Recoverable   |                                      |            | 0.100       | 0.0868                |       |        | mg/L         |      | _             | 87          | 75 - 125  |        |                 |
| Lab Sample ID: 440-244688-   | -J-1-B MS                            |            |             |                       |       |        |              |      | Cli           | ient San    | nple ID: M  | atrix  | Spike           |
| Matrix: Water  |                                      |            |             |                       |       |        |              |      |               |             | <b>Prep Type</b>                                  |        |                 |
| Analysia Potoby 576957   |                                      |            |             |                       |       |        |              |      |               |             | Prep Bat  |        |                 |
| Analysis Daluii: 3/003/  | <u> </u>                             | Sample     | Spike       | MS                    | MS    |        |              |      |               |             | %Rec.   |        |                 |
| Analysis Daten: 5/005/   | Sample                               |            |             |                       |       |        |              |      |               |             |   |        |                 |
| Analysis Batch: 576857<br>Analyte  | •                                    | Qualifier  | Added       | Result                | _     | lifier | Unit         |      | D             | %Rec        | Limits  |        |                 |
| -  | •                                    | •          | •           | <b>Resul</b><br>0.102 | Qua   | lifier | Unit<br>mg/L |      | D             | %Rec<br>102 | Limits<br>75 - 125                                |        |                 |
| Analyte<br>Phenolics, Total Recoverable  | Result<br>ND                         | Qualifier  | Added       |                       | Qua   | lifier | mg/L         | t Sa | _             | 102         | 75 - 125  | e Dup  | licate          |
| Analyte<br>Phenolics, Total Recoverable<br>Lab Sample ID: 440-244688-                  | Result<br>ND                         | Qualifier  | Added       |                       | Qua   | lifier | mg/L         | t Sa | _             | 102         | 75 - 125  | _      |                 |
| Analyte<br>Phenolics, Total Recoverable<br>Lab Sample ID: 440-244688-<br>Matrix: Water | Result<br>ND                         | Qualifier  | Added       |                       | Qua   | lifier | mg/L         | t Sa | _             | 102         | 75 - 125<br>Atrix Spike<br>Prep Type              | e: Tot | tal/NA          |
| Analyte<br>Phenolics, Total Recoverable<br>Lab Sample ID: 440-244688-<br>Matrix: Water | Result<br>ND                         | Qualifier  | Added       | 0.102                 | Qua   |        | mg/L         | t Sa | _             | 102         | 75 - 125  | e: Tot | tal/NA          |
| Analyte<br>Phenolics, Total Recoverable<br>Lab Sample ID: 440-244688-                  | Result<br>ND<br>-J-1-C MSI<br>Sample | Qualifier  | Added 0.100 | 0.102                 | Qua   | )      | mg/L         | t Sa | _             | 102         | 75 - 125<br>atrix Spike<br>Prep Type<br>Prep Bate | e: Tot | tal/NA<br>7647( |

# Method: ASTM D5057-90 - Specific Gravity and Bulk Density (Screening)

| Lab Sample ID: 180-92006-<br>Matrix: Water<br>Analysis Batch: 284432 | A-1 DU |           |        |           |         | C | Client Sample ID: Dup<br>Prep Type: Tot |       |
|--|--------|-----------|--------|-----------|---------|---|---|-------|
|  | Sample | Sample    | DU     | DU        |         |   |   | RPD   |
| Analyte  | Result | Qualifier | Result | Qualifier | Unit    | D | RPD                                     | Limit |
| Specific Gravity   | 1.0    |           | 0.986  |           | No Unit |   | 2                                       | 20    |

# Method: SM 2540B - Solids, Total

| Lab Sample ID: MB 440-554877/1<br>Matrix: Water<br>Analysis Batch: 554877<br>MB MB |        |           |    |    |      |   | Client Sarr | ple ID: Method<br>Prep Type: To |         |
|--|--------|-----------|----|----|------|---|-------------|---------------------------------|---------|
|  | MB     | MB        |    |    |      |   |             |                                 |         |
| Analyte  | Result | Qualifier | RL | RL | Unit | D | Prepared    | Analyzed                        | Dil Fac |
| Total Solids   | ND     |           | 10 | 10 | mg/L |   |             | 06/26/19 17:46                  | 1       |

Eurofins TestAmerica, Irvine

**8** 9

Job ID: 440-244608-1

Method: SM 2540B - Solids, Total (Continued)

| Lab Sample ID: LCS 440-55<br>Matrix: Water<br>Analysis Batch: 554877 | 54877/2   |                     |       |            |        |      |        | Cli    | ent   | Sar   |            | Lab Contr<br>Prep Type    |       |         |
|--|-----------|---------------------|-------|------------|--------|------|--------|--------|-------|-------|------------|---------------------------|-------|---------|
| Analysis Baten. coverr   |           |                     | Spike |            | LCS    | LCS  | 5      |        |       |       |            | %Rec.                     |       |         |
| Analyte  |           |                     | Added |            | Result | Qua  | lifier | Unit   |       | D     | %Rec       | Limits                    |       |         |
| Total Solids   |           |                     | 1000  |            | 1020   |      |        | mg/L   |       | _     | 102        | 90 - 110                  |       |         |
| Lab Sample ID: 440-244608<br>Matrix: Water                           | 8-1 DU    |                     |       |            |        |      |        |        | Cli   | ien   |            | e ID: 0620  <br>Prep Type |       |         |
| Analysis Batch: 554877   | Comula    | Comula              |       |            | DU     | DU   |        |        |       |       |            |                           |       | RPD     |
| Analyta  |           | Sample<br>Qualifier |       |            | Result |      | lifior | Unit   |       | D     |            |                           | RPD   | Limit   |
| Analyte<br>Total Solids  | 17000     |                     |       |            | 17700  | Qua  | liner  | mg/L   |       | _     |            |                           | 6     | 10      |
| –<br>Method: SM 4500 CN E  | - Cvanid  | e Total             |       |            |        |      |        |        |       |       |            |                           |       |         |
| _  |           | o, rotar            |       |            |        |      |        |        |       |       |            |                           |       |         |
| Lab Sample ID: MB 440-558<br>Matrix: Water                           | 5064/1-A  |                     |       |            |        |      |        |        | 0     | Clie  |            | ole ID: Met<br>Prep Type  |       |         |
| Analysis Batch: 555114   |           |                     |       |            |        |      |        |        |       |       |            | Prep Bato                 |       |         |
|  |           | MB MB               |       |            |        |      |        |        |       |       |            | Trop Date                 |       |         |
| Analyte  | Re        | sult Qualifier      |       | RL         |        | MDL  | Unit   |        | D     | Р     | repared    | Analyzed                  | 1     | Dil Fac |
| Cyanide, Total   |           | ND                  |       | 0.025      | C      | .013 | mg/L   |        | - (   | 06/2  | 7/19 14:53 | 06/27/19 20               | :43   | 1       |
| Lab Sample ID: LCS 440-55  | 55064/2-A |                     |       |            |        |      |        | Cli    | ent   | Sar   | nple ID:   | Lab Contr                 | ol S  | ample   |
| Matrix: Water  |           |                     |       |            |        |      |        |        |       |       |            | Prep Type                 |       |         |
| Analysis Batch: 555114   |           |                     |       |            |        |      |        |        |       |       |            | Prep Bato                 |       |         |
| -  |           |                     | Spike |            | LCS    | LCS  | 5      |        |       |       |            | %Rec.                     |       |         |
| Analyte  |           |                     | Added |            | Result | Qua  | lifier | Unit   |       | D     | %Rec       | Limits                    |       |         |
| Cyanide, Total   |           |                     | 0.200 |            | 0.201  |      |        | mg/L   |       |       | 100        | 80 - 120                  |       |         |
| <br>Lab Sample ID: 720-93715-  | K-1-B MS  |                     |       |            |        |      |        |        |       | СІ    | ient San   | nple ID: Ma               | ıtrix | Spike   |
| Matrix: Water  |           |                     |       |            |        |      |        |        |       |       |            | Prep Type                 |       |         |
| Analysis Batch: 555114   |           |                     |       |            |        |      |        |        |       |       |            | Prep Bato                 |       |         |
|  | Sample    | Sample              | Spike |            | MS     | MS   |        |        |       |       |            | %Rec.                     |       |         |
| Analyte  | Result    | Qualifier           | Added |            | Result | Qua  | lifier | Unit   |       | D     | %Rec       | Limits                    |       |         |
| Cyanide, Total   | ND        |                     | 0.200 |            | 0.198  |      |        | mg/L   |       | _     | 99         | 75 - 125                  |       |         |
|  | K-1-C MSD | )                   |       |            |        |      |        | Client | t Sa  | mp    | le ID: Ma  | atrix Spike               | Dup   | olicate |
| Matrix: Water  |           |                     |       |            |        |      |        |        |       |       |            | Prep Type                 | : To  | tal/NA  |
| Analysis Batch: 555114   |           |                     |       |            |        |      |        |        |       |       |            | Prep Bato                 |       |         |
| -  | Sample    | Sample              | Spike |            | MSD    | MSI  | כ      |        |       |       |            | %Rec.                     |       | RPD     |
| Analyte  | Result    | Qualifier           | Added |            | Result | Qua  | lifier | Unit   |       | D     | %Rec       | Limits                    | RPD   | Limit   |
| Cyanide, Total   | ND        |                     | 0.200 |            | 0.200  |      |        | mg/L   |       |       | 100        | 75 - 125                  | 1     | 20      |
| Method: SM 4500 NH3 E  | ) - Ammo  | onia                |       |            |        |      |        |        |       |       |            |                           |       |         |
| _<br>Lab Sample ID: MB 440-555<br>Matrix: Water                      | 5710/2-A  |                     |       |            |        |      |        |        | (     | Clie  |            | ole ID: Met<br>Prep Type  |       |         |
| Analysis Batch: 555735   |           |                     |       |            |        |      |        |        |       |       |            | Prep Bate                 |       |         |
| Awalista   | -         | MB MB               |       | <b>_</b> . |        |      | 11 14  |        | -     | _     |            | A I                       |       |         |
| Analyte  | Re        | Sult Qualifier      |       | RL         |        |      | Unit   |        | D - 7 |       | repared    | Analyzec                  |       | Dil Fac |
| Ammonia (as N)   |           | ND                  |       | 0.50       |        |      | mg/L   |        |       |       | 2/19 04:00 |                           |       | 1       |
| Ammonia as NH3   |           | ND                  |       | 0.60       |        | 0.12 | mg/L   |        | C     | 57/02 | 2/19/04:00 | 07/02/19 07               | .00   | 1       |

# **QC Sample Results**

Job ID: 440-244608-1

# Method: SM 4500 NH3 D - Ammonia (Continued)

| Lab Sample ID: LCS 440-5               | 55710/1-A  |                |                |        |                  | Clie   | nt Sai | mple ID  | : Lab Con     | trol Sa         | ample   |
|--|------------|----------------|----------------|--------|------------------|--------|--------|----------|---------------|-----------------|---------|
| Matrix: Water                          |            |                |                |        |                  |        |        |          | Prep Typ      |                 |         |
| Analysis Batch: 555735                 |            |                |                |        |                  |        |        |          | Prep Ba       | tch: 5          | 55710   |
|  |            |                | Spike          | LCS    | LCS              |        |        |          | %Rec.         |                 |         |
| Analyte                                |            |                | Added          | Result | Qualifier        | Unit   | D      | %Rec     | Limits        |                 |         |
| Ammonia (as N)                         |            |                | 2.50           | 2.29   |                  | mg/L   |        | 92       | 85 - 115      |                 |         |
| Ammonia as NH3                         |            |                | 3.04           | 2.78   |                  | mg/L   |        | 92       | 85 - 115      |                 |         |
| Lab Sample ID: MRL 440-5               | 55710/3-A  |                |                |        |                  | Clie   | nt Sai | mple ID  | : Lab Con     | trol Sa         | ample   |
| Matrix: Water                          |            |                |                |        |                  |        |        | - C.     | Prep Typ      |                 |         |
| Analysis Batch: 555735                 |            |                |                |        |                  |        |        |          | Prep Ba       |                 |         |
|  |            |                | Spike          | MRL    | MRL              |        |        |          | %Rec.         |                 |         |
| Analyte                                |            |                | Added          | Result | Qualifier        | Unit   | D      | %Rec     | Limits        |                 |         |
| Ammonia (as N)                         |            |                | 0.500          | 0.503  |                  | mg/L   |        | 101      | 10 - 200      |                 |         |
| Ammonia as NH3                         |            |                | 0.607          | 0.611  |                  | mg/L   |        | 101      | 10 - 200      |                 |         |
| _<br>Lab Sample ID: 440-244729         | 9-A-6-B MS |                |                |        |                  |        | C      | lient Sa | mple ID: N    | /latrix 3       | Spike   |
| Matrix: Water                          |            |                |                |        |                  |        |        |          | ·<br>Prep Typ |                 |         |
| Analysis Batch: 555735                 |            |                |                |        |                  |        |        |          | Prep Ba       |                 |         |
| · ·····, · ··· · · · · · · · · · · · · | Sample     | Sample         | Spike          | MS     | MS               |        |        |          | %Rec.         |                 |         |
| Analyte                                | -          | Qualifier      | Added          | Result | Qualifier        | Unit   | D      | %Rec     | Limits        |                 |         |
| Ammonia (as N)                         | 0.13       |                | 2.50           | 2.57   |                  | mg/L   |        | 97       | 75 - 125      |                 |         |
| Ammonia as NH3                         | 0.16       |                | 3.04           | 3.12   |                  | mg/L   |        | 97       | 75 - 125      |                 |         |
|  |            |                |                |        |                  | U U    |        |          |               |                 |         |
| Lab Sample ID: 440-244729              | 9-A-6-C MS | D              |                |        |                  | Client | Samp   | le ID: N | latrix Spik   |                 |         |
| Matrix: Water                          |            |                |                |        |                  |        |        |          | Prep Typ      |                 |         |
| Analysis Batch: 555735                 |            |                |                |        |                  |        |        |          | Prep Ba       | tch: 5          |         |
|  |            | Sample         | Spike          | MSD    | MSD              |        |        |          | %Rec.         |                 | RPD     |
| Analyte                                |            | Qualifier      | Added          |        | Qualifier        | Unit   | D      | %Rec     | Limits        | RPD             | Limit   |
| Ammonia (as N)                         | 0.13       |                | 2.50           | 2.66   |                  | mg/L   |        | 101      | 75 - 125      | 4               | 15      |
| Ammonia as NH3<br>_                    | 0.16       | J              | 3.04           | 3.24   |                  | mg/L   |        | 101      | 75 - 125      | 4               | 15      |
| <br>Lab Sample ID: 440-244608          | 8-1 DU     |                |                |        |                  |        | Clien  | t Samp   | le ID: 0620   | ) BUT           | CHER    |
| Matrix: Water                          |            |                |                |        |                  |        |        |          | Prep Typ      |                 |         |
| Analysis Batch: 555735                 |            |                |                |        |                  |        |        |          | Prep Ba       |                 |         |
| Analysis Baten. 660100                 | Sample     | Sample         |                | DU     | DU               |        |        |          | Перва         |                 | RPD     |
| Analyte                                | •          | Qualifier      |                | Result | Qualifier        | Unit   | D      |          |               | RPD             | Limit   |
| Ammonia (as N)                         | 62         |                |                | 64.1   |                  | mg/L   |        |          |               | 4               | 15      |
| Ammonia as NH3                         | 75         |                |                | 77.9   |                  | mg/L   |        |          |               | 4               | 15      |
| Method: SM 5220D - CC                  | DD         |                |                |        |                  |        |        |          |               |                 |         |
| _<br>Lab Sample ID: MB 440-55          | 5681/3     |                |                |        |                  |        | Clie   | ent Sam  | nple ID: Me   | ethod I         | Blank   |
| Matrix: Water                          |            |                |                |        |                  |        |        |          | Prep Typ      |                 |         |
| Analysis Batch: 555681                 |            |                |                |        |                  |        |        |          |               |                 |         |
| Awalista                               | -          | MB MB          | _              |        |                  | -      |        |          | <b>.</b>      |                 |         |
| Analyte                                | Re         | esult Qualifie | e <b>r</b>     |        | MDL Unit         |        | D P    | repared  | Analyz        |                 | Dil Fac |
| Chemical Oxygen Demand                 |            | ND             |                | 20     | 10 mg/L          |        |        |          | 07/01/19      | 18:36           | 1       |
|  | EEC04/4    |                |                |        |                  | Clie   | nt Sai | mple ID  | : Lab Con     | trol Sa         | ample   |
| Lab Sample ID: LCS 440-5               | 55001/4    |                |                |        |                  |        |        | -        |               |                 | tal/NA  |
|  | 55001/4    |                |                |        |                  |        |        |          |               | <i>i</i> e. 101 |         |
| Matrix: Water                          | 55001/4    |                |                |        |                  |        |        |          | гер тур       | . 100           |         |
|  | 5566 1/4   |                | Spike          | LCS    | LCS              |        |        |          | %Rec.         | <i>.</i> 100    |         |
| Matrix: Water                          | 5500 1/4   |                | Spike<br>Added |        | LCS<br>Qualifier | Unit   | D      | %Rec     |               | <i>.</i> 100    |         |

# Method: SM 5220D - COD (Continued)

| Lab Sample ID: 440-24447<br>Matrix: Water<br>Analysis Batch: 555681 | 2-I-1 MS  |           |       |        |           |        | C    | lient Sa  | mple ID:<br>Prep Ty   |     |       |   |
|---|-----------|-----------|-------|--------|-----------|--------|------|-----------|-----------------------|-----|-------|---|
| Analysis Datch. 555001  | Sample    | Sample    | Spike | MS     | MS        |        |      |           | %Rec.                 |     |       |   |
| Analyte   | Result    | Qualifier | Added | Result | Qualifier | Unit   | D    | %Rec      | Limits                |     |       | 2 |
| Chemical Oxygen Demand  | 29        |           | 200   | 210    |           | mg/L   |      | 90        | 70 - 120              |     |       |   |
| Lab Sample ID: 440-24447<br>Matrix: Water<br>Analysis Batch: 555681 | 2-I-1 MSD |           |       |        |           | Client | Samp | ole ID: N | latrix Spi<br>Prep Ty |     |       |   |
|   | Sample    | Sample    | Spike | MSD    | MSD       |        |      |           | %Rec.                 |     | RPD   |   |
| Analyte   | Result    | Qualifier | Added | Result | Qualifier | Unit   | D    | %Rec      | Limits                | RPD | Limit |   |
| Chemical Oxygen Demand  | 29        |           | 200   | 210    |           | mg/L   |      | 90        | 70 - 120              | 0   | 15    |   |

Prep Type

Total/NA

Matrix

Water

**Client Sample ID** 

0620 OD STREAMS

Lab Control Sample Dup

Prep Batch

Method

8260B

|        | Dava Detek | 14 |
|--------|------------|----|
| lethod | Prep Batch |    |
| 25     |            | 15 |
| 25     |            |    |
| 25     |            |    |

**GC/MS VOA** 

Lab Sample ID

440-244608-2

| 440 Z44000 Z         |                        |           | viator | 02000  |            |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 8260B  |            |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 8260B  |            |
| MB 440-555513/4      | Method Blank           | Total/NA  | Water  | 8260B  |            |
| LCS 440-555513/5     | Lab Control Sample     | Total/NA  | Water  | 8260B  |            |
| LCSD 440-555513/7    | Lab Control Sample Dup | Total/NA  | Water  | 8260B  |            |
| 550-124860-N-1 MS    | Matrix Spike           | Total/NA  | Water  | 8260B  |            |
| 550-124860-N-1 MSD   | Matrix Spike Duplicate | Total/NA  | Water  | 8260B  |            |
| analysis Batch: 555  | 721                    |           |        |        |            |
| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 8260B  |            |
| 440-244608-3 - RA    | 0621 BUTCHER           | Total/NA  | Water  | 8260B  |            |
| MB 440-555721/4      | Method Blank           | Total/NA  | Water  | 8260B  |            |
| LCS 440-555721/5     | Lab Control Sample     | Total/NA  | Water  | 8260B  |            |
| 440-244488-B-3 MS    | Matrix Spike           | Total/NA  | Water  | 8260B  |            |
| 440-244488-B-3 MSD   | Matrix Spike Duplicate | Total/NA  | Water  | 8260B  |            |
| Prep Batch: 555027   | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 625    |            |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 625    |            |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 625    |            |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 625    |            |
| MB 440-555027/1-A    | Method Blank           | Total/NA  | Water  | 625    |            |
| LCS 440-555027/2-A   | Lab Control Sample     | Total/NA  | Water  | 625    |            |
| LCSD 440-555027/3-A  | Lab Control Sample Dup | Total/NA  | Water  | 625    |            |
| Analysis Batch: 5554 | 490                    |           |        |        |            |
| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 625    | 55502      |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 625    | 555027     |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 625    | 55502      |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 625    | 55502      |
| MB 440-555027/1-A    | Method Blank           | Total/NA  | Water  | 625    | 55502      |
| LCS 440-555027/2-A   | Lab Control Sample     | Total/NA  | Water  | 625    | 555027     |
|                      |                        |           |        |        |            |

# HPLC/IC

# Prep Batch: 555345

LCSD 440-555027/3-A

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method      | Prep Batch |
|----------------------|------------------------|-----------|--------|-------------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 8315_W_Prep |            |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 8315_W_Prep |            |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 8315_W_Prep |            |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 8315_W_Prep |            |
| MB 440-555345/1-A    | Method Blank           | Total/NA  | Water  | 8315_W_Prep |            |
| LCS 440-555345/2-A   | Lab Control Sample     | Total/NA  | Water  | 8315_W_Prep |            |
| 440-244801-A-1-A MS  | Matrix Spike           | Total/NA  | Water  | 8315_W_Prep |            |
| 440-244801-A-1-B MSD | Matrix Spike Duplicate | Total/NA  | Water  | 8315_W_Prep |            |

Total/NA

Eurofins TestAmerica, Irvine

625

Water

555027

# 3 4 5 6 7 8 9

# HPLC/IC

# Analysis Batch: 555542

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 8315A  | 555345     |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 8315A  | 555345     |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 8315A  | 555345     |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 8315A  | 555345     |
| MB 440-555345/1-A    | Method Blank           | Total/NA  | Water  | 8315A  | 555345     |
| LCS 440-555345/2-A   | Lab Control Sample     | Total/NA  | Water  | 8315A  | 555345     |
| 440-244801-A-1-A MS  | Matrix Spike           | Total/NA  | Water  | 8315A  | 555345     |
| 440-244801-A-1-B MSD | Matrix Spike Duplicate | Total/NA  | Water  | 8315A  | 555345     |

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method      | Prep Batch |
|---------------|------------------|-----------|--------|-------------|------------|
| 440-244608-1  | 0620 BUTCHER     | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-244608-2  | 0620 OD STREAMS  | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-244608-3  | 0621 BUTCHER     | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-244608-4  | 0621 OD STREAMS  | Total/NA  | Water  | NO3NO2 Calc |            |
|               |                  |           |        |             |            |

#### **Metals**

# Prep Batch: 554883

| Lab Sample ID            | Client Sample ID       | Prep Type         | Matrix | Method | Prep Batch |
|--------------------------|------------------------|-------------------|--------|--------|------------|
| 440-244608-1             | 0620 BUTCHER           | Total Recoverable | Water  | 3005A  |            |
| 440-244608-3             | 0621 BUTCHER           | Total Recoverable | Water  | 3005A  |            |
| MB 440-554883/1-A        | Method Blank           | Total Recoverable | Water  | 3005A  |            |
| LCS 440-554883/2-A       | Lab Control Sample     | Total Recoverable | Water  | 3005A  |            |
| 440-244629-K-1-B MS ^10  | Matrix Spike           | Total Recoverable | Water  | 3005A  |            |
| 440-244629-K-1-C MSD ^10 | Matrix Spike Duplicate | Total Recoverable | Water  | 3005A  |            |

#### Analysis Batch: 555055

| Lab Sample ID            | Client Sample ID       | Prep Type         | Matrix | Method | Prep Batch |
|--------------------------|------------------------|-------------------|--------|--------|------------|
| 440-244608-1             | 0620 BUTCHER           | Total Recoverable | Water  | 6010B  | 554883     |
| 440-244608-3             | 0621 BUTCHER           | Total Recoverable | Water  | 6010B  | 554883     |
| MB 440-554883/1-A        | Method Blank           | Total Recoverable | Water  | 6010B  | 554883     |
| LCS 440-554883/2-A       | Lab Control Sample     | Total Recoverable | Water  | 6010B  | 554883     |
| 440-244629-K-1-B MS ^10  | Matrix Spike           | Total Recoverable | Water  | 6010B  | 554883     |
| 440-244629-K-1-C MSD ^10 | Matrix Spike Duplicate | Total Recoverable | Water  | 6010B  | 554883     |

#### Prep Batch: 555647

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-1        | 0620 BUTCHER           | Total/NA  | Water  | 7470A  |            |
| 440-244608-2        | 0620 OD STREAMS        | Total/NA  | Water  | 7470A  |            |
| 440-244608-3        | 0621 BUTCHER           | Total/NA  | Water  | 7470A  |            |
| 440-244608-4        | 0621 OD STREAMS        | Total/NA  | Water  | 7470A  |            |
| MB 440-555647/1-A   | Method Blank           | Total/NA  | Water  | 7470A  |            |
| LCS 440-555647/2-A  | Lab Control Sample     | Total/NA  | Water  | 7470A  |            |
| 720-93762-A-1-G MSD | Matrix Spike Duplicate | Total/NA  | Water  | 7470A  |            |

# Analysis Batch: 555834

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 440-244608-1  | 0620 BUTCHER     | Total/NA  | Water  | 7470A  | 555647     |
| 440-244608-2  | 0620 OD STREAMS  | Total/NA  | Water  | 7470A  | 555647     |
| 440-244608-3  | 0621 BUTCHER     | Total/NA  | Water  | 7470A  | 555647     |

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-244608-1

| 8 |
|---|
| 9 |
|   |
|   |
|   |

12 13 14

15

556202

# Metals (Continued)

# Analysis Batch: 555834 (Continued)

| ab Sample ID        | Client Sample ID       | Prep Type         | Matrix | Method | Prep Batch |
|---------------------|------------------------|-------------------|--------|--------|------------|
| 40-244608-4         | 0621 OD STREAMS        | Total/NA          | Water  | 7470A  | 555647     |
| IB 440-555647/1-A   | Method Blank           | Total/NA          | Water  | 7470A  | 555647     |
| CS 440-555647/2-A   | Lab Control Sample     | Total/NA          | Water  | 7470A  | 555647     |
| 20-93762-A-1-G MSD  | Matrix Spike Duplicate | Total/NA          | Water  | 7470A  | 555647     |
| ep Batch: 556202    |                        |                   |        |        |            |
| ab Sample ID        | Client Sample ID       | Prep Type         | Matrix | Method | Prep Batch |
| 40-244608-2         | 0620 OD STREAMS        | Total Recoverable | Water  | 3005A  |            |
| 40-244608-4         | 0621 OD STREAMS        | Total Recoverable | Water  | 3005A  |            |
| IB 440-556202/1-A   | Method Blank           | Total Recoverable | Water  | 3005A  |            |
| CS 440-556202/2-A   | Lab Control Sample     | Total Recoverable | Water  | 3005A  |            |
| 40-244965-Y-1-B MS  | Matrix Spike           | Total Recoverable | Water  | 3005A  |            |
| 40-244965-Y-1-C MSD | Matrix Spike Duplicate | Total Recoverable | Water  | 3005A  |            |
| alysis Batch: 5563  | 98                     |                   |        |        |            |
| ab Sample ID        | Client Sample ID       | Prep Type         | Matrix | Method | Prep Batc  |
| 40-244608-2         | 0620 OD STREAMS        | Total Recoverable | Water  | 6010B  | 55620      |
| 40-244608-4         | 0621 OD STREAMS        | Total Recoverable | Water  | 6010B  | 55620      |
| IB 440-556202/1-A   | Method Blank           | Total Recoverable | Water  | 6010B  | 55620      |
| CS 440-556202/2-A   | Lab Control Sample     | Total Recoverable | Water  | 6010B  | 55620      |
| 40-244965-Y-1-B MS  | Matrix Spike           | Total Recoverable | Water  | 6010B  | 55620      |

# **General Chemistry**

Matrix Spike Duplicate

440-244965-Y-1-C MSD

#### Analysis Batch: 284432

| Lab Sample ID    | Client Sample ID | Prep Type | Matrix | Method Prep Batch |
|------------------|------------------|-----------|--------|-------------------|
| 440-244608-1     | 0620 BUTCHER     | Total/NA  | Water  | ASTM D5057-90     |
| 440-244608-2     | 0620 OD STREAMS  | Total/NA  | Water  | ASTM D5057-90     |
| 440-244608-3     | 0621 BUTCHER     | Total/NA  | Water  | ASTM D5057-90     |
| 440-244608-4     | 0621 OD STREAMS  | Total/NA  | Water  | ASTM D5057-90     |
| 180-92006-A-1 DU | Duplicate        | Total/NA  | Water  | ASTM D5057-90     |

Total Recoverable

Water

6010B

#### Analysis Batch: 306826

| Lab Sample ID      | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|--------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-1       | 0620 BUTCHER           | Total/NA  | Water  | 353.2  |            |
| 440-244608-2       | 0620 OD STREAMS        | Total/NA  | Water  | 353.2  |            |
| 440-244608-3       | 0621 BUTCHER           | Total/NA  | Water  | 353.2  |            |
| 440-244608-4       | 0621 OD STREAMS        | Total/NA  | Water  | 353.2  |            |
| MB 320-306826/15   | Method Blank           | Total/NA  | Water  | 353.2  |            |
| LCS 320-306826/16  | Lab Control Sample     | Total/NA  | Water  | 353.2  |            |
| 440-244710-A-1 MS  | Matrix Spike           | Total/NA  | Water  | 353.2  |            |
| 440-244710-A-1 MSD | Matrix Spike Duplicate | Total/NA  | Water  | 353.2  |            |

# Analysis Batch: 554877

| Lab Sample ID   | Client Sample ID | Prep Type | Matrix | Method   | Prep Batch |
|-----------------|------------------|-----------|--------|----------|------------|
| 440-244608-1    | 0620 BUTCHER     | Total/NA  | Water  | SM 2540B |            |
| 440-244608-2    | 0620 OD STREAMS  | Total/NA  | Water  | SM 2540B |            |
| 440-244608-3    | 0621 BUTCHER     | Total/NA  | Water  | SM 2540B |            |
| 440-244608-4    | 0621 OD STREAMS  | Total/NA  | Water  | SM 2540B |            |
| MB 440-554877/1 | Method Blank     | Total/NA  | Water  | SM 2540B |            |

#### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

# **General Chemistry (Continued)**

# Analysis Batch: 554877 (Continued)

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method   | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| LCS 440-554877/2 | Lab Control Sample | Total/NA  | Water  | SM 2540B |            |
| 440-244608-1 DU  | 0620 BUTCHER       | Total/NA  | Water  | SM 2540B |            |

# Analysis Batch: 554894

| Lab Sample ID   | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-----------------|------------------|-----------|--------|--------|------------|
| 440-244608-1    | 0620 BUTCHER     | Total/NA  | Water  | 2540E  |            |
| 440-244608-2    | 0620 OD STREAMS  | Total/NA  | Water  | 2540E  |            |
| 440-244608-3    | 0621 BUTCHER     | Total/NA  | Water  | 2540E  |            |
| 440-244608-4    | 0621 OD STREAMS  | Total/NA  | Water  | 2540E  |            |
| MB 440-554894/1 | Method Blank     | Total/NA  | Water  | 2540E  |            |
| 440-244608-1 DU | 0620 BUTCHER     | Total/NA  | Water  | 2540E  |            |

#### Prep Batch: 555064

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method     | Prep Batch |
|---------------------|------------------------|-----------|--------|------------|------------|
| 440-244608-1        | 0620 BUTCHER           | Total/NA  | Water  | Distill/CN |            |
| 440-244608-2        | 0620 OD STREAMS        | Total/NA  | Water  | Distill/CN |            |
| 440-244608-3        | 0621 BUTCHER           | Total/NA  | Water  | Distill/CN |            |
| 440-244608-4        | 0621 OD STREAMS        | Total/NA  | Water  | Distill/CN |            |
| MB 440-555064/1-A   | Method Blank           | Total/NA  | Water  | Distill/CN |            |
| LCS 440-555064/2-A  | Lab Control Sample     | Total/NA  | Water  | Distill/CN |            |
| 720-93715-K-1-B MS  | Matrix Spike           | Total/NA  | Water  | Distill/CN |            |
| 720-93715-K-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | Distill/CN |            |

# Analysis Batch: 555114

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method       | Prep Batch |
|---------------------|------------------------|-----------|--------|--------------|------------|
| 440-244608-1        | 0620 BUTCHER           | Total/NA  | Water  | SM 4500 CN E | 555064     |
| 440-244608-2        | 0620 OD STREAMS        | Total/NA  | Water  | SM 4500 CN E | 555064     |
| 440-244608-3        | 0621 BUTCHER           | Total/NA  | Water  | SM 4500 CN E | 555064     |
| 440-244608-4        | 0621 OD STREAMS        | Total/NA  | Water  | SM 4500 CN E | 555064     |
| MB 440-555064/1-A   | Method Blank           | Total/NA  | Water  | SM 4500 CN E | 555064     |
| LCS 440-555064/2-A  | Lab Control Sample     | Total/NA  | Water  | SM 4500 CN E | 555064     |
| 720-93715-K-1-B MS  | Matrix Spike           | Total/NA  | Water  | SM 4500 CN E | 555064     |
| 720-93715-K-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 4500 CN E | 555064     |

# Prep Batch: 555267

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 351.2  |            |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 351.2  |            |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 351.2  |            |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 351.2  |            |
| MB 440-555267/3-A    | Method Blank           | Total/NA  | Water  | 351.2  |            |
| LCS 440-555267/4-A   | Lab Control Sample     | Total/NA  | Water  | 351.2  |            |
| LCSD 440-555267/5-A  | Lab Control Sample Dup | Total/NA  | Water  | 351.2  |            |
| 440-244619-K-1-B MS  | Matrix Spike           | Total/NA  | Water  | 351.2  |            |
| 440-244619-K-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 351.2  |            |

# Prep Batch: 555282

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 440-244608-1  | 0620 BUTCHER     | Total/NA  | Water  | 1664A  |            |
| 440-244608-2  | 0620 OD STREAMS  | Total/NA  | Water  | 1664A  |            |
| 440-244608-3  | 0621 BUTCHER     | Total/NA  | Water  | 1664A  |            |

7/25/2019 (Rev. 1)

Job ID: 440-244608-1

#### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

# **General Chemistry (Continued)**

# Prep Batch: 555282 (Continued)

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-4        | 0621 OD STREAMS        | Total/NA  | Water  | 1664A  |            |
| MB 440-555282/1-A   | Method Blank           | Total/NA  | Water  | 1664A  |            |
| LCS 440-555282/2-A  | Lab Control Sample     | Total/NA  | Water  | 1664A  |            |
| LCSD 440-555282/3-A | Lab Control Sample Dup | Total/NA  | Water  | 1664A  |            |

# Analysis Batch: 555325

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-1        | 0620 BUTCHER           | Total/NA  | Water  | 1664A  | 555282     |
| 440-244608-2        | 0620 OD STREAMS        | Total/NA  | Water  | 1664A  | 555282     |
| 440-244608-3        | 0621 BUTCHER           | Total/NA  | Water  | 1664A  | 555282     |
| 440-244608-4        | 0621 OD STREAMS        | Total/NA  | Water  | 1664A  | 555282     |
| MB 440-555282/1-A   | Method Blank           | Total/NA  | Water  | 1664A  | 555282     |
| LCS 440-555282/2-A  | Lab Control Sample     | Total/NA  | Water  | 1664A  | 555282     |
| LCSD 440-555282/3-A | Lab Control Sample Dup | Total/NA  | Water  | 1664A  | 555282     |

# Prep Batch: 555362

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method          | Prep Batch |
|----------------------|------------------------|-----------|--------|-----------------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 365.2/365.3/365 |            |
| MB 440-555362/1-A    | Method Blank           | Total/NA  | Water  | 365.2/365.3/365 |            |
| LCS 440-555362/2-A   | Lab Control Sample     | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-244457-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-244457-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 365.2/365.3/365 |            |

# Analysis Batch: 555384

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 365.3  | 555362     |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 365.3  | 555362     |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 365.3  | 555362     |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 365.3  | 555362     |
| MB 440-555362/1-A    | Method Blank           | Total/NA  | Water  | 365.3  | 555362     |
| LCS 440-555362/2-A   | Lab Control Sample     | Total/NA  | Water  | 365.3  | 555362     |
| 440-244457-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | 365.3  | 555362     |
| 440-244457-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 365.3  | 555362     |

# Analysis Batch: 555602

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 351.2  | 555267     |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 351.2  | 555267     |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 351.2  | 555267     |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 351.2  | 555267     |
| MB 440-555267/3-A    | Method Blank           | Total/NA  | Water  | 351.2  | 555267     |
| LCS 440-555267/4-A   | Lab Control Sample     | Total/NA  | Water  | 351.2  | 555267     |
| LCSD 440-555267/5-A  | Lab Control Sample Dup | Total/NA  | Water  | 351.2  | 555267     |
| 440-244619-K-1-B MS  | Matrix Spike           | Total/NA  | Water  | 351.2  | 555267     |
| 440-244619-K-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 351.2  | 555267     |

# **General Chemistry**

# Analysis Batch: 555681

| Lab Sample ID      | Client Sample ID       | Prep Type | Matrix | Method   | Prep Batch |
|--------------------|------------------------|-----------|--------|----------|------------|
| 440-244608-1       | 0620 BUTCHER           | Total/NA  | Water  | SM 5220D |            |
| 440-244608-2       | 0620 OD STREAMS        | Total/NA  | Water  | SM 5220D |            |
| 440-244608-3       | 0621 BUTCHER           | Total/NA  | Water  | SM 5220D |            |
| 440-244608-4       | 0621 OD STREAMS        | Total/NA  | Water  | SM 5220D |            |
| MB 440-555681/3    | Method Blank           | Total/NA  | Water  | SM 5220D |            |
| LCS 440-555681/4   | Lab Control Sample     | Total/NA  | Water  | SM 5220D |            |
| 440-244472-I-1 MS  | Matrix Spike           | Total/NA  | Water  | SM 5220D |            |
| 440-244472-I-1 MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 5220D |            |

# Prep Batch: 555710

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method        | Prep Batch |
|----------------------|------------------------|-----------|--------|---------------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | SM 4500 NH3 B |            |
| MB 440-555710/2-A    | Method Blank           | Total/NA  | Water  | SM 4500 NH3 B |            |
| LCS 440-555710/1-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 B |            |
| MRL 440-555710/3-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-244729-A-6-B MS  | Matrix Spike           | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-244729-A-6-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-244608-1 DU      | 0620 BUTCHER           | Total/NA  | Water  | SM 4500 NH3 B |            |

#### Analysis Batch: 555735

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method        | Prep Batch |
|----------------------|------------------------|-----------|--------|---------------|------------|
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| MB 440-555710/2-A    | Method Blank           | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| LCS 440-555710/1-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| MRL 440-555710/3-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| 440-244729-A-6-B MS  | Matrix Spike           | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| 440-244729-A-6-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 4500 NH3 D | 555710     |
| 440-244608-1 DU      | 0620 BUTCHER           | Total/NA  | Water  | SM 4500 NH3 D | 555710     |

#### Analysis Batch: 556060

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method Prep Batch | I |
|---------------|------------------|-----------|--------|-------------------|---|
| 440-244608-1  | 0620 BUTCHER     | Total/NA  | Water  | Total Nitrogen    |   |
| 440-244608-2  | 0620 OD STREAMS  | Total/NA  | Water  | Total Nitrogen    |   |
| 440-244608-3  | 0621 BUTCHER     | Total/NA  | Water  | Total Nitrogen    |   |
| 440-244608-4  | 0621 OD STREAMS  | Total/NA  | Water  | Total Nitrogen    |   |

# Prep Batch: 576470

| Lab Sample ID       | Client Sample ID   | Prep Type | Matrix | Method         | Prep Batch |
|---------------------|--------------------|-----------|--------|----------------|------------|
| 440-244608-1        | 0620 BUTCHER       | Total/NA  | Water  | Distill/Phenol |            |
| 440-244608-2        | 0620 OD STREAMS    | Total/NA  | Water  | Distill/Phenol |            |
| 440-244608-3        | 0621 BUTCHER       | Total/NA  | Water  | Distill/Phenol |            |
| 440-244608-4        | 0621 OD STREAMS    | Total/NA  | Water  | Distill/Phenol |            |
| MB 680-576470/1-A   | Method Blank       | Total/NA  | Water  | Distill/Phenol |            |
| LCS 680-576470/2-A  | Lab Control Sample | Total/NA  | Water  | Distill/Phenol |            |
| 440-244688-J-1-B MS | Matrix Spike       | Total/NA  | Water  | Distill/Phenol |            |

# Eurofins TestAmerica, Irvine

# General Chemistry (Continued)

# Prep Batch: 576470 (Continued)

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method         | Prep Batch |
|----------------------|------------------------|-----------|--------|----------------|------------|
| 440-244688-J-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | Distill/Phenol |            |
| Analysis Batch: 5768 | 57                     |           |        |                |            |
| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method         | Prep Batch |
| 440-244608-1         | 0620 BUTCHER           | Total/NA  | Water  | 420.1          | 576470     |
| 440-244608-2         | 0620 OD STREAMS        | Total/NA  | Water  | 420.1          | 576470     |
| 440-244608-3         | 0621 BUTCHER           | Total/NA  | Water  | 420.1          | 576470     |
| 440-244608-4         | 0621 OD STREAMS        | Total/NA  | Water  | 420.1          | 576470     |
| MB 680-576470/1-A    | Method Blank           | Total/NA  | Water  | 420.1          | 576470     |
| LCS 680-576470/2-A   | Lab Control Sample     | Total/NA  | Water  | 420.1          | 576470     |
| 440-244688-J-1-B MS  | Matrix Spike           | Total/NA  | Water  | 420.1          | 576470     |
| 440-244688-J-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 420.1          | 576470     |

Job ID: 440-244608-1

# Qualifiers

|                                  | /ntec Consultants, Inc. Job ID: 440-244608-1<br>Ocean Disposal WW Sample  |   |
|----------------------------------|---|---|
|                                  |   |   |
| Qualifiers                       |   |   |
| GC/MS VOA<br>Qualifier           | Qualifier Description   |   |
| J                                | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.  |   |
| GC/MS Semi<br>Qualifier          | VOA<br>Qualifier Description  | 5 |
| X                                | Surrogate is outside control limits   |   |
| HPLC/IC<br>Qualifier             | Qualifier Description   |   |
| Н                                | Sample was prepped or analyzed beyond the specified holding time  |   |
| <mark>Metals</mark><br>Qualifier | Qualifier Description   | 8 |
| 4                                | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable. | 9 |
| F2                               | MS/MSD RPD exceeds control limits   | 1 |
| J                                | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.  |   |
| <b>General Che</b>               | mistry  |   |
| Qualifier                        | Qualifier Description   |   |
| F1                               | MS and/or MSD Recovery is outside acceptance limits.  |   |
| Glossary                         |   | 1 |
| Abbreviation                     | These commonly used abbreviations may or may not be present in this report.   |   |
| ¤                                | Listed under the "D" column to designate that the result is reported on a dry weight basis  |   |

| Abbreviation   | These commonly used abbreviations may or may not be present in this report.                                 |
|----------------|---|
| ¤              | Listed under the "D" column to designate that the result is reported on a dry weight basis                  |
| %R             | Percent Recovery  |
| CFL            | Contains Free Liquid  |
| CNF            | Contains No Free Liquid   |
| DER            | Duplicate Error Ratio (normalized absolute difference)  |
| Dil Fac        | Dilution Factor   |
| DL             | Detection Limit (DoD/DOE)   |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC            | Decision Level Concentration (Radiochemistry)   |
| EDL            | Estimated Detection Limit (Dioxin)  |
| LOD            | Limit of Detection (DoD/DOE)  |
| LOQ            | Limit of Quantitation (DoD/DOE)   |
| MDA            | Minimum Detectable Activity (Radiochemistry)  |
| MDC            | Minimum Detectable Concentration (Radiochemistry)   |
| MDL            | Method Detection Limit  |
| ML             | Minimum Level (Dioxin)  |
| NC             | Not Calculated  |
| ND             | Not Detected at the reporting limit (or MDL or EDL if shown)  |
| PQL            | Practical Quantitation Limit  |
| QC             | Quality Control   |
| RER            | Relative Error Ratio (Radiochemistry)   |
| RL             | Reporting Limit or Requested Limit (Radiochemistry)   |
| RPD            | Relative Percent Difference, a measure of the relative difference between two points                        |
| TEF            | Toxicity Equivalent Factor (Dioxin)   |
| TEQ            | Toxicity Equivalent Quotient (Dioxin)   |

# Job ID: 440-244608-1

# Laboratory: Eurofins TestAmerica, Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| uthority                                     | Program       |                      | EPA Region                | Identification Number       | Expiration Date                    |
|--|---------------|----------------------|---------------------------|-----------------------------|------------------------------------|
| California                                   | State Program |                      | 9                         | CA ELAP 2706                | 06-30-19 *                         |
| The following analytes the agency does not o |               | , but the laboratory | / is not certified by the | e governing authority. This | list may include analytes for whic |
| Analysis Method                              | Prep Method   | Matrix               | Analyt                    | e                           |                                    |
| 6010B  | 3005A         | Water                | Alumir                    | num                         |                                    |
| 6010B  | 3005A         | Water                | Boron                     |                             |                                    |
| 6010B  | 3005A         | Water                | Magnesium                 |                             |                                    |
| 6010B  | 3005A         | Water                | Manga                     | anese                       |                                    |
| 6010B  | 3005A         | Water                | Titaniu                   | um                          |                                    |
| 8260B  |               | Water                | m,p-X                     | ylene                       |                                    |
| 8260B  |               | Water                | Xylene                    | es, Total                   |                                    |
| NO3NO2 Calc                                  |               | Water                | Nitrate                   | e as N                      |                                    |
| NO3NO2 Calc                                  |               | Water                | Nitrite                   | as N                        |                                    |
| SM 2540B                                     |               | Water                | Total S                   | Solids                      |                                    |
| SM 4500 NH3 D                                | SM 4500 NH3 B | Water                | Ammo                      | onia as NH3                 |                                    |
| Total Nitrogen                               |               | Water                | Nitrog                    | en, Total                   |                                    |

# Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority              | Program            | EPA Region | Identification Number | Expiration Date |
|------------------------|--------------------|------------|-----------------------|-----------------|
| Arkansas DEQ           | State              |            | 19-033-0              | 06-27-20        |
| Arkansas DEQ           | State Program      | 6          | 88-0690               | 06-27-20        |
| California             | State              |            | 2891                  | 04-30-20        |
| California             | State Program      | 9          | 2891                  | 04-30-20        |
| Connecticut            | State              |            | PH-0688               | 09-30-20        |
| Connecticut            | State Program      | 1          | PH-0688               | 09-30-20        |
| Florida                | NELAP              | 4          | E871008               | 06-30-20        |
| Florida                | NELAP              |            | E871008               | 06-30-20        |
| Illinois               | NELAP              | 5          | 200005                | 06-30-20        |
| Illinois               | NELAP              |            | 004375                | 06-30-20        |
| Kansas                 | NELAP              | 7          | E-10350               | 01-31-20        |
| Kansas                 | NELAP              |            | E-10350               | 03-31-20        |
| Kentucky (UST)         | State Program      | 4          | 162013                | 04-30-20        |
| Kentucky (WW)          | State Program      | 4          | KY98043               | 12-31-19        |
| Louisiana              | NELAP              | 6          | 04041                 | 06-30-20        |
| Minnesota              | NELAP Secondary AB | 5          | 042-999-482           | 12-31-19        |
| Nevada                 | State              |            | PA00164               | 07-31-19        |
| Nevada                 | State Program      | 9          | PA00164               | 07-31-19        |
| New Hampshire          | NELAP              | 1          | 2030                  | 04-04-20        |
| New Jersey             | NELAP              | 2          | PA005                 | 06-30-20        |
| New Jersey             | NELAP              |            | PA005                 | 06-30-20        |
| New York               | NELAP              | 2          | 11182                 | 03-31-20        |
| New York               | NELAP              |            | 11182                 | 04-01-20        |
| North Carolina (WW/SW) | State Program      | 4          | 434                   | 12-31-19        |
| Oregon                 | NELAP              | 10         | PA-2151               | 02-06-20        |
| Oregon                 | NELAP              |            | PA-2151               | 02-06-20        |
| Pennsylvania           | NELAP              | 3          | 02-00416              | 04-30-20        |
| Pennsylvania           | NELAP              |            | 02-00416              | 04-30-20        |
| Rhode Island           | State              |            | LAO00362              | 12-30-19        |

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# **Accreditation/Certification Summary**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

# Job ID: 440-244608-1

# Laboratory: Eurofins TestAmerica, Pittsburgh (Continued) All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority          | Program             | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------------|------------|-----------------------|-----------------|
| Rhode Island       | State Program       | 1          | LAO00362              | 12-30-19        |
| South Carolina     | State Program       | 4          | 89014                 | 04-30-20        |
| Texas              | NELAP               | 6          | T104704528-15-2       | 03-31-20        |
| Texas              | NELAP               |            | T104704528            | 03-31-20        |
| US Fish & Wildlife | Federal             |            | LE94312A-1            | 07-31-19        |
| US Fish & Wildlife | US Federal Programs |            | 058448                | 07-31-20        |
| USDA               | Federal             |            | P-Soil-01             | 06-26-22        |
| Utah               | NELAP               | 8          | PA001462015-4         | 05-31-20        |
| Utah               | NELAP               |            | PA001462019-8         | 05-31-20        |
| Virginia           | NELAP               | 3          | 460189                | 09-14-19        |
| Virginia           | NELAP               |            | 10043                 | 09-14-19        |
| West Virginia DEP  | State               |            | 142                   | 01-31-20        |
| West Virginia DEP  | State Program       | 3          | 142                   | 01-31-20        |
| Wisconsin          | State               |            | 998027800             | 08-31-19        |
| Wisconsin          | State Program       | 5          | 998027800             | 08-31-19        |

# **Accreditation/Certification Summary**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

# Job ID: 440-244608-1

# Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority          | Program       | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------|------------|-----------------------|-----------------|
| Alaska (UST)       | State Program | 10         | 17-020                | 01-20-21        |
| ANAB               | DoD           |            | L2468                 | 01-20-21        |
| ANAB               | DOE           |            | L2468.01              | 01-20-21        |
| Arizona            | State Program | 9          | AZ0708                | 08-11-19        |
| Arkansas DEQ       | State Program | 6          | 88-0691               | 06-17-20        |
| California         | State Program | 9          | 2897                  | 01-31-20        |
| Colorado           | State Program | 8          | CA00044               | 08-31-19        |
| Connecticut        | State         |            | PH-0691               | 06-30-21        |
| Connecticut        | State Program | 1          | PH-0691               | 06-30-21        |
| Florida            | NELAP         | 4          | E87570                | 06-30-20        |
| Florida            | NELAP         |            | E87570                | 06-30-20        |
| Hawaii             | State Program | 9          | N/A                   | 01-29-20        |
| Illinois           | NELAP         | 5          | 200060                | 03-17-19 *      |
| Kansas             | NELAP         | 7          | E-10375               | 10-31-19        |
| Louisiana          | NELAP         | 6          | 30612                 | 06-30-20        |
| Maine              | State Program | 1          | CA0004                | 04-14-20        |
| Michigan           | State Program | 5          | 9947                  | 01-31-20        |
| Nevada             | State Program | 9          | CA00044               | 07-31-19        |
| New Hampshire      | NELAP         | 1          | 2997                  | 04-20-20        |
| New York           | NELAP         | 2          | 11666                 | 04-01-20        |
| Oregon             | NELAP         | 10         | 4040                  | 01-29-20        |
| Oregon             | NELAP         |            | 4040                  | 01-29-20        |
| Pennsylvania       | NELAP         | 3          | 68-01272              | 03-31-20        |
| Pennsylvania       | NELAP         |            | 68-01272              | 03-31-20        |
| Texas              | NELAP         | 6          | T104704399            | 05-31-20        |
| US Fish & Wildlife | Federal       |            | LE148388-0            | 07-31-19        |
| USDA               | Federal       |            | P330-18-00239         | 01-17-21        |
| USEPA UCMR         | Federal       | 1          | CA00044               | 12-31-20        |
| Utah               | NELAP         | 8          | CA00044               | 02-29-20        |
| /ermont            | State Program | 1          | VT-4040               | 04-16-20        |
| Virginia           | NELAP         | 3          | 460278                | 03-14-20        |
| Washington         | State Program | 10         | C581                  | 05-05-20        |
| West Virginia (DW) | State Program | 3          | 9930C                 | 12-31-19        |
| Wyoming            | State Program | 8          | 8TMS-L                | 01-28-19 *      |

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# **Accreditation/Certification Summary**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-244608-1

# Laboratory: Eurofins TestAmerica, Savannah

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority            | Program       | EPA Region | Identification Number | Expiration Date |
|----------------------|---------------|------------|-----------------------|-----------------|
|                      | AFCEE         |            | SAVLAB                |                 |
| Alabama              | State Program | 4          | 41450                 | 06-30-19 *      |
| laska                | State Program | 10         |                       | 06-30-20        |
| laska (UST)          | State Program | 10         | UST-104               | 09-22-19        |
| NAB                  | DoD           |            | L2463                 | 09-22-19        |
| NAB                  | ISO/IEC 17025 |            | L2463.01              | 09-22-19        |
| izona                | State Program | 9          | AZ0808                | 12-14-19        |
| rkansas DEQ          | State Program | 6          | 88-0692               | 02-01-20        |
| alifornia            | State Program | 9          | 2939                  | 06-30-19 *      |
| olorado              | State Program | 8          | N/A                   | 12-31-19        |
| onnecticut           | State Program | 1          | PH-0161               | 03-31-21        |
| orida                | NELAP         | 4          | E87052                | 06-30-20        |
| eorgia               | State Program | 4          | 803                   | 06-30-20        |
| Jam                  | State Program | 9          | 15-005r               | 04-17-20        |
| awaii                | State Program | 9          | N/A                   | 06-30-20        |
| nois                 | NELAP         | 5          | 200022                | 11-30-19        |
| diana                | State Program | 5          | N/A                   | 06-30-20        |
| Wa                   | State Program | 7          | 353                   | 06-30-20        |
| entucky (DW)         | State Program | 4          | 90084                 | 12-31-19        |
| entucky (UST)        | State Program | 4          | 18                    | 06-30-20        |
| ntucky (WW)          | State Program | 4          | 90084                 | 12-31-19        |
| isiana               | NELAP         | 6          | 30690                 | 06-30-20        |
|                      | NELAP         | 6          | LA160019              | 12-31-19        |
| isiana (DW)<br>ne    |               |            |                       |                 |
|                      | State Program | 1          | GA00006               | 09-25-20        |
| yland                | State Program | 3          | 250                   | 12-31-19        |
| ssachusetts          | State Program | 1          | M-GA006               | 06-30-20        |
| higan                | State Program | 5          | 9925                  | 06-30-20        |
| sissippi             | State Program | 4          | N/A                   | 06-30-19 *      |
| oraska               | State Program | 7          | TestAmerica-Savannah  | 06-30-19 *      |
| v Jersey             | NELAP         | 2          | GA769                 | 06-30-20        |
| v Mexico             | State Program | 6          | N/A                   | 06-30-20        |
| v York               | NELAP         | 2          | 10842                 | 04-01-20        |
| th Carolina (DW)     | State Program | 4          | 13701                 | 07-31-19 *      |
| rth Carolina (WW/SW) | State Program | 4          | 269                   | 12-31-19        |
| lahoma               | State Program | 6          | 9984                  | 08-31-19        |
| nnsylvania           | NELAP         | 3          | 68-00474              | 06-30-20        |
| erto Rico            | State Program | 2          | GA00006               | 01-01-20        |
| outh Carolina        | State Program | 4          | 98001                 | 06-30-19 *      |
| ennessee             | State Program | 4          | TN02961               | 06-30-20        |
| xas                  | NELAP         | 6          | T104704185-19-13      | 11-30-19        |
| xas (DW)             | State Program | 1          | T104704185            | 06-30-20        |
| Fish & Wildlife      | Federal       |            | LE058448-0            | 07-31-19        |
| ginia                | NELAP         | 3          | 460161                | 06-14-20        |
| ashington            | State Program | 10         | C805                  | 06-10-20        |
| est Virginia (DW)    | State Program | 3          | 9950C                 | 12-31-19        |
| est Virginia DEP     | State Program | 3          | 094                   | 06-30-19 *      |
| isconsin             | State Program | 5          | 999819810             | 08-31-19 *      |
| yoming               | State Program | 8          | 8TMS-L                | 06-30-16 *      |

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



July 25, 2019

Lena Davidkova TestAmerica 17461 Derian Avenue Suite 100 Irvine, CA 92614-

Project Name: Ocean Disposal WW Sample 44022550 Physis Project ID: 1803004-003

Dear Lena,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 6/27/2019. A total of 4 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Organics Pyrethrins 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 714 602-5320 Extension 202 mistymercier@physislabs.com



# **PROJECT SAMPLE LIST**

| TestAme   | rica                          |             | PHYSIS Project ID: 1803004-003 |      |        |  |
|-----------|-------------------------------|-------------|--------------------------------|------|--------|--|
| Ocean Dis | posal WW Sample 44022550      |             | Total Samples: 4               |      |        |  |
| PHYSIS I  | D Sample ID                   | Description | Date                           | Time | Matrix |  |
| 64823     | 0620 BUTCHER (440-244608-1)   |             | 6/20/2019                      | 6:11 | Liquid |  |
| 64824     | )620 OD STREAMS (440-244608-2 |             | 6/20/2019                      | 6:33 | Liquid |  |
| 64825     | 0621 BUTCHER (440-244608-3)   |             | 6/21/2019                      | 6:01 | Liquid |  |
| 64826     | )621 OD STREAMS (440-244608-4 |             | 6/21/2019                      | 6:20 | Liquid |  |

i - 2 of 6



#### **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                  |



#### 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

i - 4 of 6



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.

i - 5 of 6

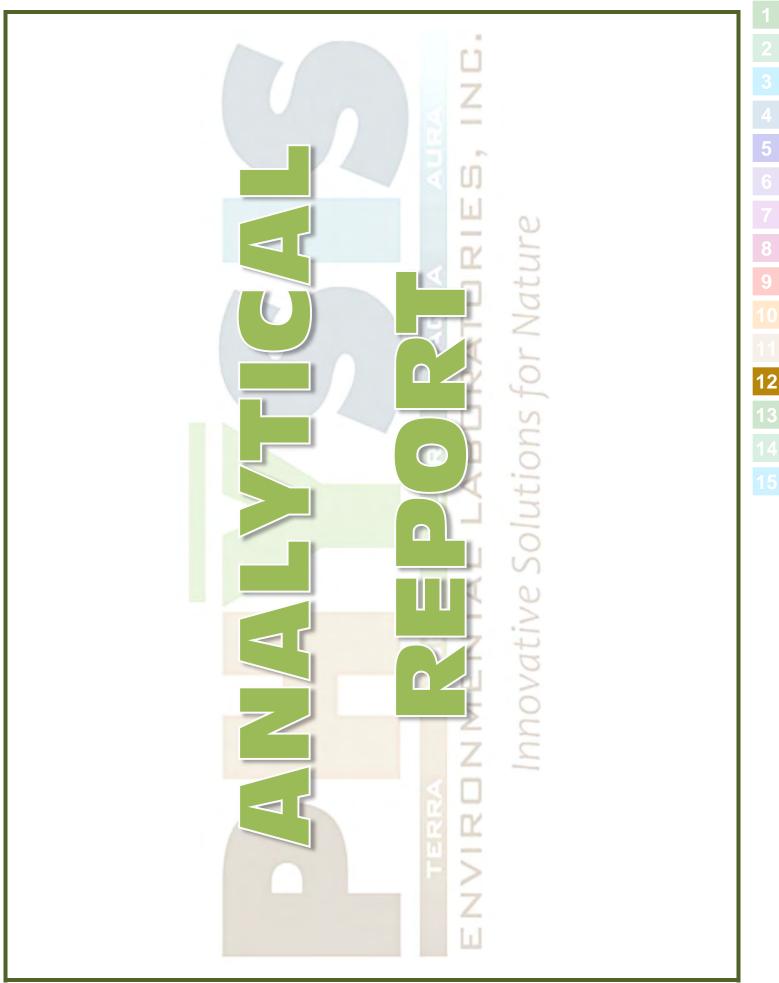


#### PHYSIS QUALIFIER CODES

| 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 MDI   |
| 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<br>limits due to matrix interference. The associated B/BS were within limits,<br>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<br>readily achieved using routine laboratory practices, therefore accuracy<br>and/or precision acceptance limits do not apply   |
| Q    | analyte was outside the specified QAPP acceptance limits for precision<br>and/or accuracy but within Physis derived acceptance limits, therefore the<br>sample data was reported without further clarification   |
| R    | Physis' QM allows for 5% of the target compounds greater than 10 times the<br>MDL to be outside the specified acceptance limits for precision and/or<br>accuracy. This is often due to random error and does not indicate any<br>significant problems with the analysis of these project samples |
|      |  |

i - 6 of 6

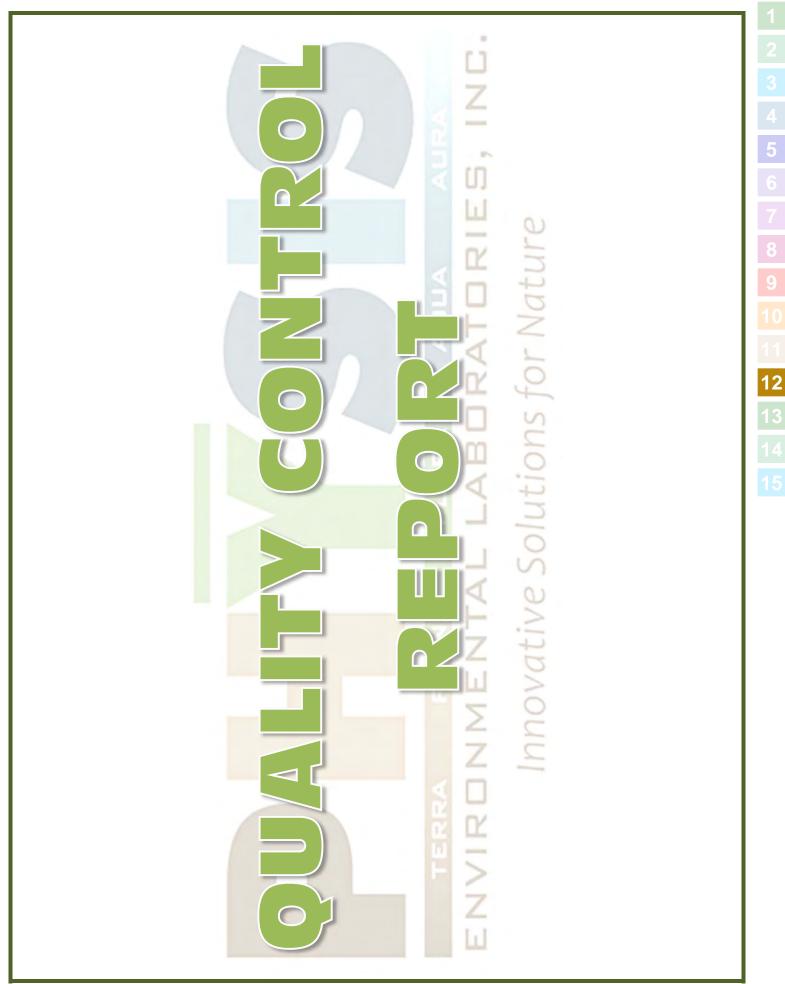
1904 E. Wright Circle Anaheim, CA 92806 (714) 602-5320 fax (714) 602-5321 www.phy Page 51 of 69





PHYSIS Project ID: 1803004-003 Client: TestAmerica Project: Ocean Disposal WW Sample 44022550

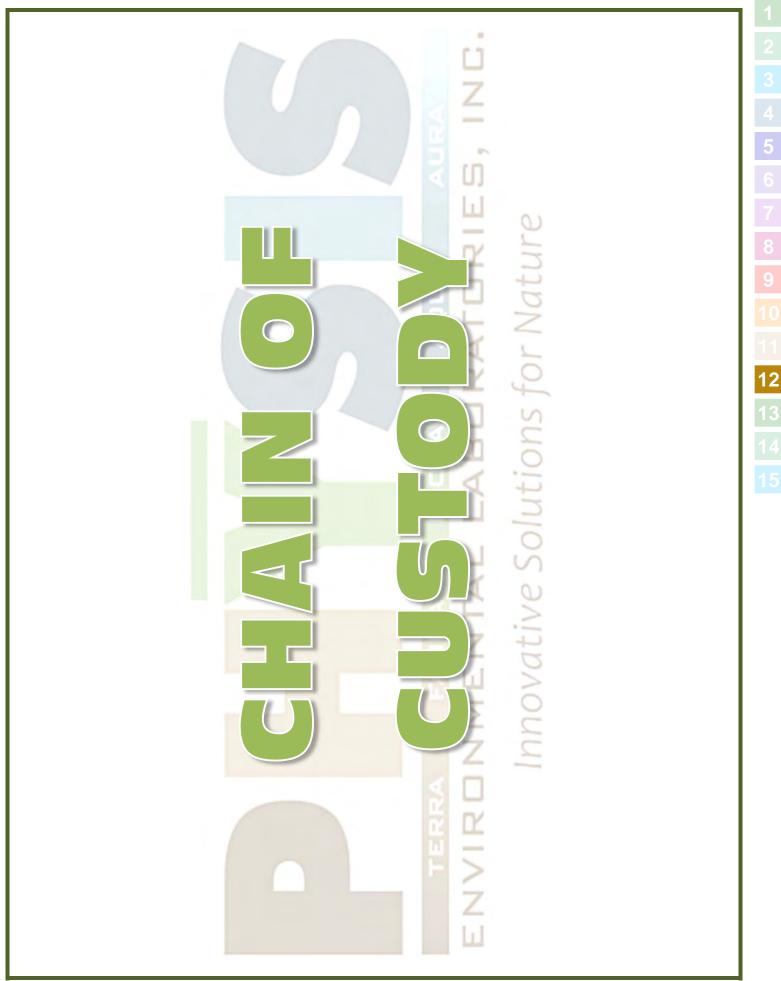
|                     |                 |                       | P     | yrethroid      | S   |                    |          |                |               |
|---------------------|-----------------|-----------------------|-------|----------------|-----|--------------------|----------|----------------|---------------|
| ANALYTE             | Method          | Units                 | RESUL | T MDL          | RL  | Fraction QA CODE   | Batch ID | Date Processed | Date Analyzed |
| Sample ID: 64823-R1 | 0620 BUTCHER (4 | 140-244608-1 <b>)</b> |       | Matrix: Liquid |     | Sampled: 20-Jun-19 | 6:11     | Received: 27   | Jun-19        |
| Pyrethrins          | EPA 625-NCI     | ng/L                  | ND    | 100            | 200 | Total              | 0-23068  | 27-Jun-19      | 18-Jul-19     |
| Sample ID: 64824-R1 | 0620 OD STREAN  | IS (440-24460         | 8-2)  | Matrix: Liquid |     | Sampled: 20-Jun-19 | 6:33     | Received: 27   | Jun-19        |
| Pyrethrins          | EPA 625-NCI     | ng/L                  | ND    | 100            | 200 | Total              | 0-23068  | 27-Jun-19      | 18-Jul-19     |
| Sample ID: 64825-R1 | 0621 BUTCHER (4 | 40-244608-3)          |       | Matrix: Liquid |     | Sampled: 21-Jun-19 | 6:01     | Received: 27   | Jun-19        |
| Pyrethrins          | EPA 625-NCI     | ng/L                  | ND    | 100            | 200 | Total              | 0-23068  | 27-Jun-19      | 18-Jul-19     |
| Sample ID: 64826-R1 | 0621 OD STREAM  | S (440-24460)         | 8-4)  | Matrix: Liquid |     | Sampled: 21-Jun-19 | 6:20     | Received: 27   | Jun-19        |
| Pyrethrins          | EPA 625-NCI     | ng/L                  | ND    | 100            | 200 | Total              | O-23068  | 27-Jun-19      | 18-Jul-19     |





Innovative Solutions for Nature

| 1904 E. W               | /right Circle, Anal        | neim CA 92806                              | main: (714) | 602-5320 | fax: (714) | 602-5321                                | www.p            | hysislabs.com                   | info@physislab            | os.com CA ELAP #276              | 9       |
|-------------------------|----------------------------|--|-------------|----------|------------|---|------------------|---------------------------------|---------------------------|----------------------------------|---------|
| Ру                      | rethroi                    | ds   |             |          |            |   |                  | QUAL                            | ITY CONT                  | ROL REPORT                       | -       |
| ANALYTE                 | FRACTI                     | ON RESULT                                  | MDL         | RL       | UNITS      | SPIKE<br>LEVEL                          | SOURCE<br>RESULT |                                 | URACY<br>LIMITS           | PRECISION<br>% LIMITS            | QA CODE |
| Sample ID: 6            | 4822-B1                    | QAQC Procedura<br>Method: EPA 625-N        |             |          |            | <b>C: DI Water</b><br>D: 0-23068        |                  | Sampled:<br>Prepared: 27        | -Jun-19                   | Received:<br>Analyzed: 17-Jul-14 | 9       |
| Pyrethrins              | Total                      | ND   | 100         | 200      | ng/L       |   |                  |                                 |                           |                                  |         |
| Sample ID: 6 Pyrethrins | 9 <b>4822-BS1</b><br>Total | QAQC Procedura<br>Method: EPA 625-N<br>508 |             | 200      |            | <b>c: DI Water</b><br>D: O-23068<br>500 | 0                | Sampled:<br>Prepared: 27<br>102 | -Jun-19<br>50 - 150% PASS | Received:<br>Analyzed: 17-Jul-1  | 9       |
| Sample ID: 6            | 4822-BS2                   | QAQC Procedura<br>Method: EPA 625-N        |             |          |            | <b>c: DI Water</b><br>D: 0-23068        |                  | Sampled:<br>Prepared: 27        | Jun-19                    | Received:<br>Analyzed: 17-Jul-14 | 9       |
| Pyrethrins              | Total                      | 508  | 100         | 200      | ng/L       | 500                                     | 0                | 102                             | 50 - 150% PASS            | 0 30 PASS                        |         |



| Primary Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2<br>Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2<br>Empty Kit Relinquished by: Date:<br>Relinquished by: Date: | Requested: I, II, III, IV, Other (specify)<br>Inquished by: | requested: I. II, III, IV, Other (specify)<br>Inquished by: | , III, IV, Other (specify) | , III, IV, Other (specify) | , ill, IV, Other (specify) |                    |   | ssible Hazard Identification                   | Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories. Inc. places the ownership of method, analyle & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not Laboratories, inc. attention immediately, if all requested accreditations are current to date, return the signed Chain of Custody attesting to add to the TestAmerica laboratory or while the provided. Any changes to accreditation status should be brought to TestAmerica laboratories. Inc. attention immediately, if all requested accreditations are current to date, return the signed Chain of Custody attesting to add compliance to TestAmerica laboratories. Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to add compliance to TestAmerica laboratories. This sample shipment is forwarded to the testAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica laboratories. |  | BLITZIO | 8-4) 6/21/19     | BUTCHER (440-244608-3) 6/20/19 | 81/02/0 |  | Sample Identification - Client ID (Lab ID) Sample Date |                                     | oue.<br>SSOW# | rruject vame:<br>Project #<br>Project #<br>44022550 | Email: WO #:                            | PO # | State, Zbr<br>2A, 92806                               |           | 1904 Wright Circle, , 713/2019 | Physics<br>Physics<br>Environmental Laboratories                  | Shipping/Receiving<br>Company | ion (Sub Contract Lab)     | 1.0                          |
|--|---|---|----------------------------|----------------------------|----------------------------|--------------------|---|--|--|--|---------|------------------|--------------------------------|---------|--|--|-------------------------------------|---------------|---|---|------|---|-----------|--------------------------------|---|-------------------------------|----------------------------|------------------------------|
|  |   |   | 1450                       |                            |                            | Rank: 2            |   | a chain of custody a                           | lership of method, an<br>the samples must be<br>d Chain of Custody a   |  | Pacific | Pacific<br>06:20 | Pacific                        | Pacific | 06:11 Preser   | Time G=grab)   |                                     |               |   |   |      |   | s):       |                                |   |                               |                            | Chain of Custody Record      |
|  | Company   | Company   | N                          |                            | T                          |                    |   | ttesting to said comp                          | alyte & accreditation<br>shipped back to the<br>ttesting to said come  |  | Water   | Water            | Water                          | Water   | Preservation Code:   | O=waste/oil,<br>BT=Tissue, A=Air)                      | Matrix<br>(W=water, S=solid,        |               |   |   |      |   |           |                                |   | E-Mail:<br>lena.c             | Lab                        | ustody F                     |
|  | Received by:  | Received by: 1  | + mount                    | _                          | Time:                      | Requiren           | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) Return To Client | plicance to TestAmerica Laboratories, Inc.     | n compliance upon cut subcontract laborator<br>9 TestAmerica laboratory or other instructions<br>plicance to TestAmerica Laboratorica Line   |  | ×       | ×                | ×                              | ×       |  | Perf   | Filtered<br>prm MS/M<br>(Pyrethrins | SD (Ye        | s or N  | or No)<br>o)                            |      |   | Analysis  | Company Company                | Accreditations Required (See note);<br>State Program - California | testamericaino co             | Lab PM:<br>Davidkova, Lena |                              |
| Conlar Temperatural to and an  | Date/Time:  | Date/Time!  | Date/Time: 2:              | Menior of Sublident        | -                          |                    | Assessed if samples are ret   | and the section of the section of the          | ies. This sample shipment is forward swill be provided. Any changes to ac  |  |         |                  |                                |         |  |  |                                     |               |   |   |      |   | Requested |                                | valioma   | State of Origin:              | Carrier Tracking No(s):    |                              |
|  | Company   | Company   | +/19 0920 Company C.       |                            |                            | Archive For Months | ained longer than 1 month)  | coregization status should be brought to TestA | led under chain-of-custody. If the laboratory i<br>coreditation status should be brought to TestA  |  | N       | 2                | 2                              | 2       | Contraining and a second secon |  | Number o                            | Other:        |   | H - Ascorbic Acid T - TSP Dodecahydrate |      | D - Nacetate O - AsNaO2<br>D - Nitric Acid P - Na2O4S | 00        | 440-244608-1                   | Page 1 of 1<br>Job #:   | Page:                         | COC No:                    | eurofins Environment Testing |



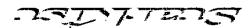
1803004-003

# Sample Receipt Summary

| Client: TestAmerica                       | Date Received: 6/27       | /2019 Received B | y: MN Inspected By: RGH |
|---|---------------------------|------------------|-------------------------|
| Courier:                                  | Cooler:                   |                  | Temperature:            |
| 🗌 Physis 🗹 FEDEX 🗌 UPS 🔲 Client           | Cooler Box T              | Total #: 1       | □ BLUE ✔ WET □ DRY      |
| Start End Other:                          | Other:                    |                  | □ None 0.9°C            |
|   | Sample Integrity Upon Rec | eipt:            |                         |
| 1. COC(s) included and completely filled  | out                       |                  | Yes                     |
| 2. All sample containers arrived intact   |                           |                  |                         |
| 3. All samples listed on COC(s) are prese |                           |                  |                         |
| 4. Information on containers consistent   |                           |                  |                         |
| 5. Correct containers and volume for all  | analyses indicated        |                  | Yes                     |
| 6. All samples received within method h   | olding time               |                  | Yes                     |
| 7. Correct preservation used for all anal | yses indicated            |                  | Yes                     |
| 8. Name of sampler included on COC(s)     |                           |                  | <u>N</u> o              |

Notes:

| Политики   | Image: NUCL 2017-573-41.0.0         Полово, Lett         <  | Irvine, CA 92614-5817<br>Phone (949) 261-1022 Fax (949) 260-3297 |                            |                        |  |                |                          |                 |                     |                       |          |   |  |
|---|--|--|----------------------------|------------------------|--|----------------|--------------------------|-----------------|---------------------|-----------------------|----------|---|--|
| The Signame is the second of the s  | Image: Section of the section of t                  | ent Information  | Sampler NICK BUT           |                        | Lab PM<br>Davidkova,   | Lena           |                          |                 | Carrier 1           | racking No(s)         |          | COC No<br>440-163988-2989                 | 1.1                                    |
| 00         Дата Рассост         Алта Руча (В сертивания)         Алта Руча (В сертивания) <t< th=""><th>Image: Image: Image:</th><th>nt Contact<br/>K Butson</th><th>2</th><th>0016</th><th>E-Mail<br/>lena.davidko</th><th>ova@testa</th><th>mencainc</th><th>com</th><th></th><th></th><th></th><th>Page 1 of 1</th><th></th></t<> | Image:                         | nt Contact<br>K Butson   | 2                          | 0016                   | E-Mail<br>lena.davidko   | ova@testa      | mencainc                 | com             |                     |                       |          | Page 1 of 1                               |  |
| State 200         Des Calific Properties         Des Calific Properties         Processes           0         0         Microareal (Brw);         Microareal (Brw);         Microareal (Brw);         Microareal (Brw);           0         0         Microareal (Brw);         Microareal (Brw);         Microareal (Brw);         Microareal (Brw);           0         0         Microareal (Brw);         Microareal (Brw);         Microareal (Brw);         Microareal (Brw);         Microareal (Brw);           0         0         Microareal (Brw);         Microareal (Brw   | Suppose         Data Reference         Procession         Procession         Procession           0         Procession         Procession         Procession         Procession         Procession           0         Procession         Procession         Procession         Procession         Procession         Procession           0         Procession         Pro   | npany<br>osvritec Consultants, Inc                               |                            |                        |  |                | Ana                      |                 | queste              | 75                    |          | # qof                                     |  |
| No.     Display of the control and t  | Полнование         Полновани         Полновани         Полнован   | ress<br>5 Hagev Bivd. Suite 290                                  | Due Date Requested:        |                        |  | -0-8           |                          |                 |                     |                       |          | 80  | ;;;                                    |
| Biology     Development     Development     Development     Development       (a)     Profiles Order for for equicity       (a)     Profiles     Profiles     Profiles     Profiles     Profiles     Profiles       (a)     Profiles     Profiles     Profiles     Profiles     Profiles     Profiles     Profiles       (a)     Profiles     Profiles     Profiles     Profiles     Profiles     Profiles     Profiles     Profiles       (a)     Profiles     Profiles     Profiles     Profiles     Profiles     Profiles <td>Bit     Distriction       (a)     (b)       (b)     (b)       (c)     (b)       (c)     (b)       (c)     (b)       (c)     (b)       (c)     (c)       (c)   &lt;</td> <td>tierloo</td> <td></td> <td></td> <td></td> <td>HN009</td> <td>S</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>N - None<br/>0 - AsNaO2</td>  | Bit     Distriction       (a)     (b)       (b)     (b)       (c)     (b)       (c)     (b)       (c)     (b)       (c)     (b)       (c)     (c)       (c)   <  | tierloo  |                            |                        |  | HN009          | S                        |                 |                     |                       |          |   | N - None<br>0 - AsNaO2                 |
| Bit     Distribution     Distribution       Inflaction     Wost     Wost     Wost       Inflaction     Wost     Annotation     March All Properties       Inflaction     Bit     Annotation     March All Properties     March All Properties       Inflaction     Bit     Annotation     March All Properties     March All Properties     March All Properties       Inflaction     Bit     Sample from All Properties     March All Properties     March All Properties     March All Properties       Inflaction     Bit     Sample from All Properties     March All Properties     March All Properties     March All Properties       Inflaction     Bit     Bit     Sample from All Properties     March All Properties     March All Properties       Inflaction     Bit     Bit     Bit     Bit     Bit     Bit  | (1)         (1)<   | e, Zip<br>I, N2L GR5   | er<br>Dr                   | r Sol                  |  | 7WS '0         |                          |                 |                     |                       |          |   | P - Na204S<br>0 - Na2S03<br>B - Na2S03 |
| Пли солт         Works         Manual         Manua         Manua<  | Infliction         008 <th< td=""><td>ne<br/>9-514-2253(Tel)</td><td>Purchase Order not require</td><td>q</td><td>{o</td><td>00-00</td><td></td><td></td><td></td><td></td><td></td><td>Ţ</td><td>T - TSP Dodecahydra</td></th<>   | ne<br>9-514-2253(Tel)  | Purchase Order not require | q                      | {o   | 00-00          |                          |                 |                     |                       |          | Ţ   | T - TSP Dodecahydra                    |
| MUSample  | RUL (ST     SAMPA (MACSING)     Processo       RUL (ST     SAMPA (MACSING)     Processo     Processo (MACSING)       RUL (ST     SAMPA (MACSING)     Processo (MACSING)     Processo (MACSING)       RUL (ST     Processo (MACSING)     Processo (MACSING)     Processo (MACSING)       RUL (ST     Processo (MACSING)     Processo (MACSING)     Processo (MACSING)       RUL (ST <td>al stron@geosyntec.com</td> <td>#OM</td> <td></td> <td></td> <td></td> <td></td> <td>əts</td> <td>0.49rah</td> <td></td> <td></td> <td>I - Ice<br/>J - DI Water</td> <td>U - Acetone<br/>V - MCAA</td>  | al stron@geosyntec.com   | #OM                        |                        |  |                |                          | əts             | 0.49rah             |                       |          | I - Ice<br>J - DI Water                   | U - Acetone<br>V - MCAA                |
| R.L.I.S.T. SAWOA         Stoma         Mattra red         Mattr  | Ruch (ST Style)     Sample One     Sample One     Ruch (ST Style)       Colo     Sample One  | ect Name<br>ean Disposal WW Sample                               | Project #-<br>44022550     |                        |  |                |                          |                 | al Rec              |                       |          | K - EUIA<br>L - EDA                       | W - pH 4-5<br>Z - other (specify)      |
| Control         Sample         Metrix         Norm  | Column     Sample Table     Table Table     Table Table     Table Table Table     Table  | STAPICIS7  | #MOSS                      |                        | and the second |                |                          |                 |                     |                       |          |   |  |
| D       BUTCHEIL       Ocl_20/19       dc: 11       C       Water       N   | D     BUTCHER     66/by/19     6/cm     7<   | mula Irlantific stion  |                            |                        | benetili i blei  | 261.2-TKN, 365 | 9M (8307-8010)           | 1∕tH∃-2)si8-925 |                     | fablemro3-8101        | ·····    |   | tructions/Note .                       |
| 0       BUTCHEL       06/b20/19       dc:       Water       N <td>0       BUTCHEIL       06/30/19       dc: 11       C       Water       N&lt;</td> <td></td> <td>P</td> <td></td> <td>1</td> <td>Ø</td> <td></td> <td>Z</td> <td>8</td> <td>Z</td> <td></td> <td></td> <td></td>   | 0       BUTCHEIL       06/30/19       dc: 11       C       Water       N<  |  | P                          |                        | 1  | Ø              |                          | Z               | 8                   | Z                     |          |   |  |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$   | 1       BUTCHEZ       CL/30/19       Oc/30/19       Oc/30/1  | NG 20 RUTCHER  | 0                          | $\left  \cdot \right $ |  | XX             | ÍZ<br>X                  | XXX             | X                   | XX                    |          |   |  |
| TEARTCHEE       CL/31/IP       Ob. cl       Water       Wither       Model       Mo  | TEATCHEZ       CU/31/P       CE/31/P   | 20 ON STREI  | 19 QC.                     |                        | e  | XX             |                          | XXX             | Ŕ                   | KX<br>K               |          |   | 67                                     |
| P       O.D. STEEAMS       C6/21/1/q       OCL       Water       X  | P       OD       STREAMS       C6/21/19       O6/20       C       Water       N <td>21 BUTC</td> <td>121/19 06</td> <td></td> <td>-ia</td> <td>X</td> <td></td> <td>K<br/>K</td> <td><b>於</b></td> <td>XX</td> <td></td> <td></td> <td></td>   | 21 BUTC  | 121/19 06                  |                        | -ia  | X              |                          | K<br>K          | <b>於</b>            | XX                    |          |   |  |
| → 1       Water       Water       Water       Water       H   | Old       Water       Water       Water       Water       Water       Water       Mater  | 5  | 1/12                       | с<br>U                 | er   | XX             |                          |                 |                     | JXX                   | -<br>X   | -   | 0                                      |
| Image: State of the state o   | Indefinition     Indefinition     Nater     Nater     Nater     Indefinition       Indentification     Nater     Nater     Nater     Indefinition     Indefinition       Indentification     Nater     Nater     Indentification     Indentification     Indentification       Indentification     Indentification     Nater     Indentification     Indentification     Indentification       Indentification     Indentification     Indentification     Indentification     Indentification     Indentification       Indentification     Indentification     <   | 0621   |                            |                        | er   |                | <br>                     | 1               |                     |                       |          |   | ?                                      |
| Water     Water     Water     Water     Water     Water     Mater       Water     Water     Water     Water     Mater     Mater     Mater       Water     Water     Water     Water     Mater     Mater     Mater       Water     Noter     Water     Noter     Mater     Mater     Mater       Water     Noter     Noter     Noter     Noter     Mater     Mater       Mater     Noter     Noter     Noter     Noter     Mater     Mater       Mater     Noter     Noter     Noter     Noter     Noter     Noter       Mater     Noter     Noter     Noter     Noter     Noter   | Image: Skin intrant     Mater     Nater     N  |  |                            | Wat                    | Gr   |                | <br>                     |                 |                     |                       |          |   |  |
| Water       Multication       440-244608 Chain of Custody         d       Defentitication       Defentication       Defentication       De  | ad Identification     addition     water     water     water     addition       ad Identification     water     water     water     addition     addition       ad Identification     water     water     bit     addition     addition       ad Identification     water     bit     bit     bit     bit     bit       ad Identification     bit     bit     bit     bit     b  |  |                            | Wat                    | er   |                |                          |                 |                     |                       |          |   |  |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$   | didentification     didentification     water  |  |                            | Wat                    | er   |                |                          |                 |                     |                       |          |   |  |
| a) Identification       Water       Water       Water       440:244603 Chain of Custody         a) Identification       a) Interviewer       a) Interviewer       a) Interviewer       a) Interviewer         a) $\Box Flammable$ $\Box Skin Intant       \Box Sample Sample$  | a)     Definition     Water  |  |                            | Wat                    | er   |                |                          |                 |                     |                       |          |   |  |
| d Identification     d Identification     Sample Disposal (A fee may be assessed if samples are retained longer than 1 m       d □ Flammable     Skin Intlant     Poison B     Unknown     Radiological     Return To Client     Disposal By Lab     Archive For       uested. 1, II, IV, Other (specify)     DeterTime     Date:     Disposal By Lab     Disposal By Lab     Archive For       unshod by:     Date:     Date:     Image:     Image:     Image:     Image:     Image:       duished by:     Date:     Date:     Image:     Image:     Image:     Image:     Image:       duished by:     Date:     Date:     Image:     Image:     Image:     Image:     Image:       duished by:     Date:     Date:     Image:     Image:     Image:     Image:     Image:       duished by:     Date:     Image:     Image:     Image:     Image:     Image:     Image:       duished by:     Date:     Date:     Image:     Image:     Image:     Image:     Image:       duished by:     Date:     Image:     Image:     Image:     Image:     Image:     Image:       display:     Date:     Image:     Image:     Image:     Image:     Image:     Image:       disto:     Image: <td>didentification       didentification       didentification       didentification         d       Flammable       Skin Imtant       Poison B       Unknown       Return       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested. 1, II, IN. Other (specify)       Utestice       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Return To Client       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested. 1, II, IN. Other (specify)       Utestice       Date:       Date:       Disposal (A fee may be assessed if samples are retained tonger)         utested by:       Date:       Image       Date:       Date:       Date:       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested by:       Date:       Image       Date:       Image       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested by:       Date:       Image       Image       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested for       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Disposal (A fee may be assessed if samples are retained tonger tonger thant)         Mote       <t< td=""><td></td><td></td><td>Wat</td><td>5</td><td></td><td></td><td></td><td></td><td>440-2</td><td>44608 Ch</td><td>ain of Custody</td><td></td></t<></td>  | didentification       didentification       didentification       didentification         d       Flammable       Skin Imtant       Poison B       Unknown       Return       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested. 1, II, IN. Other (specify)       Utestice       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Return To Client       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested. 1, II, IN. Other (specify)       Utestice       Date:       Date:       Disposal (A fee may be assessed if samples are retained tonger)         utested by:       Date:       Image       Date:       Date:       Date:       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested by:       Date:       Image       Date:       Image       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested by:       Date:       Image       Image       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)         utested for       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Disposal (A fee may be assessed if samples are retained tonger than 1 mtant)       Disposal (A fee may be assessed if samples are retained tonger tonger thant)         Mote <t< td=""><td></td><td></td><td>Wat</td><td>5</td><td></td><td></td><td></td><td></td><td>440-2</td><td>44608 Ch</td><td>ain of Custody</td><td></td></t<>   |  |                            | Wat                    | 5  |                |                          |                 |                     | 440-2                 | 44608 Ch | ain of Custody                            |  |
| differition     definition     Bather in model     Sample Disposal (A fee may be assessed if samples are retained longer than 1 mc       d     Flammable     Skin Inntant     Poison B     Unknown     Radiological       ulested. I, II, IN, Other (specify)     Skin Inntant     Disposal By Lab     Archive For       ulested. I, II, IN, Other (specify)     Method of Supment     Archive For       ulested. I, II, IN, Other (specify)     Date:     Instructions/OC Requirements:       ulested. I, II, IN, Other (specify)     Date:     Instructions/OC Requirements:       ulested. I, II, IN, Other (specify)     Date:     Instructions/OC Requirements:       ulested. I     Date     Disposal By Lab     Archive For       Juished by:     Date:     Inne:     Method of Supment       Date:Time     Date:Time     Company     Received by       Date:Time     Company     Received by     Date:Time       Date:Time     Company     Received by     Date:Time  | didentification     diffication     Barnable     Sample Disposal (A fee may be assessed if samples are retained longer than 1 mc       d     Flammable     Skin Intrant     Poison B     Unknown     Radiological     Return To Client     Disposal By Lab     Archive For       ulushed by:     Disposal by the second by     Method of Shipment     Method of Shipment     Oily for the second by     Method of Shipment       Dister fine     Date:     Date:     Time:     Method of Shipment     Oily for for forments:       Dister fine     Date:     Date:     Time:     Method of Shipment       0     Date: fine     Company     Received by     Date: fine     Oily for   |  |                            |                        |  |                | ;                        |                 |                     |                       |          |   |  |
| Inested. I., III, IV, Other (specify)     Determents:       guilished by:     Date:       Date:     Company       Received by     Date:       Date: Time     Company       Received by     Date: Time       Date: Time     Company       Received by     Date: Time   | Inested. I., III, IV, Other (specify), U.E. C     Date:     Instructions/QC Requirements:       Juilehed by:     Date:     Image: Company     Method of Shpment       Juilehed by:     Date:     Date: Time:     Method of Shpment       Juilehed by:     Date: Time:     Date: Time:     Method of Shpment       Juilehed by:     Date: Time:     Date: Time:     Method of Shpment       Juilehed by:     Date: Time:     Date: Time:     Method of Shpment       Juilehed by:     Date: Time:     Date: Time:     Method of Shpment       Juilehed by:     Date: Time:     Date: Time:     Method of Shpment       Juilehed by:     Date: Time:     Date: Time:     Method of Shpment       S Intact:     Custody Seal No:     Tho weak     Method Shure: Contentions, C.e. M. Contentions, C.e.  | Skin Imtant  | Unknown                    | Padiological           |  | nple Disp      | osal ( A fe<br>To Client | e may be        | assesse<br>Disposal | d if sample<br>Bv Lab |          | <b>lined longer than 1</b> r<br>chive For | month)<br>Months                       |
| quished by:     Date:     Date:     Method of Shipment       Additional of Shipment     DateTime     DateTime     DateTime       Additional of Shipment     DateTime     DateTime     DateTime       DateTime     DateTime     Company     Received by     DateTime       DateTime     DateTime     Company     Received by     DateTime       DateTime     Company     Received by     DateTime     DateTime   | quished by:     Date:     Time:     Method of Shipment       Quicked by:     Date/Time     Date/Time     Date/Time       Company     Date/Time     Date/Time     Date/Time       Date/Time     Date/Time     Date/Time     Date/Time       Date/Time     Date/Time     Date/Time     Date/Time       Date/Time     Date/Time     Date/Time     Date/Time       Indict:     Custody Seal No::     Date/Time     Date/Time       No     T/A w ed/Time     Company     Received by     Date/Time       No     T/A w ed/Time     Company     Received by     Date/Time   | Other (specify)  |                            |                        | Spe  | cial Instru    | ctions/QC                | Requireme       | ints:               |                       |          |   |  |
| DateTime     DateTime     Company     Received by       2019/06/24     11 · 42.cm/662%) TEC     Received by     DateTime       DateTime     company     Received by     Company       DateTime     company     Received by     Company  | Endert     Date/Time     Date/Time     Date/Time     Date/Time       2019/06/24     11.42.cut GOTATEC     Received by     Date/Time       Date/Time     Date/Time     Company     Received by       Date/Time     Date/Time     Company     Received by       S Intact:     Custody Seal No.:     Date/Time     Date/Time       Tho weak     March     March     March   | quished by:  |                            |                        | Time:  |                |                          |                 | Me                  | thod of Shipm         | art      |   |  |
| Date/Time     Company     Received by     Date/Time       Date/Time     Company     Received by     6/26/19     030   | Date/Time     Date/Time     Company     Received by     Date/Time       Pate/Time     Date/Time     Company     Received by $\bigcirc$ $\bigcirc$ Pate/Time     Company     Received by $\bigcirc$ $\bigcirc$ $\bigcirc$ Pate/Time     Conternative(s)* C and Other Remarks $\bigcirc$ $\bigcirc$ $\bigcirc$ $^{A}$ No     That due detection (s) $\bigcirc$ $\bigcirc$ $\bigcirc$ $\bigcirc$   |  | 20                         |                        |  | Received by    |                          |                 |                     | Date                  | em       |   | Company                                |
| Date/Time Company Received by C Date/Time 030   | pate Intact:     Custody Seal No.:     Date/Time     Company     Received by     Company     Bage Time       A No     Custody Seal No.:     Tho weak $b/u \in S_1$ $b/u \in S_1$ $b/u \in S_1$ $b/u \in S_1$   | nquished by  |                            | Company                |  | Received by    |                          |                 |                     | Date                  | emi      |   | Company                                |
|   | Custody Seal No.: Custody Seal No.: Tho weak $b/ueb = b/ueb =$ |  | Date/Time                  | Company                |  | Received by    | 2                        | Q               | $h_{\parallel}$     | Date                  | /192     | 0   | Company P 1/                           |
|   |  | <u>)</u>   |                            | 3                      |  |                | à 2                      |                 | 10                  | 8                     |          | 4<br>5<br>6                               | 2                                      |



#### **COMMERCIAL INVOICE**

5tarKist Samoa Co. P.O. Box 368 96739 24, 036799

| Phone: 684-733-4385                  |
|--------------------------------------|
| Department: Environmental Compliance |
| Sender: Nick Butson                  |

**Date:** 6/24/19

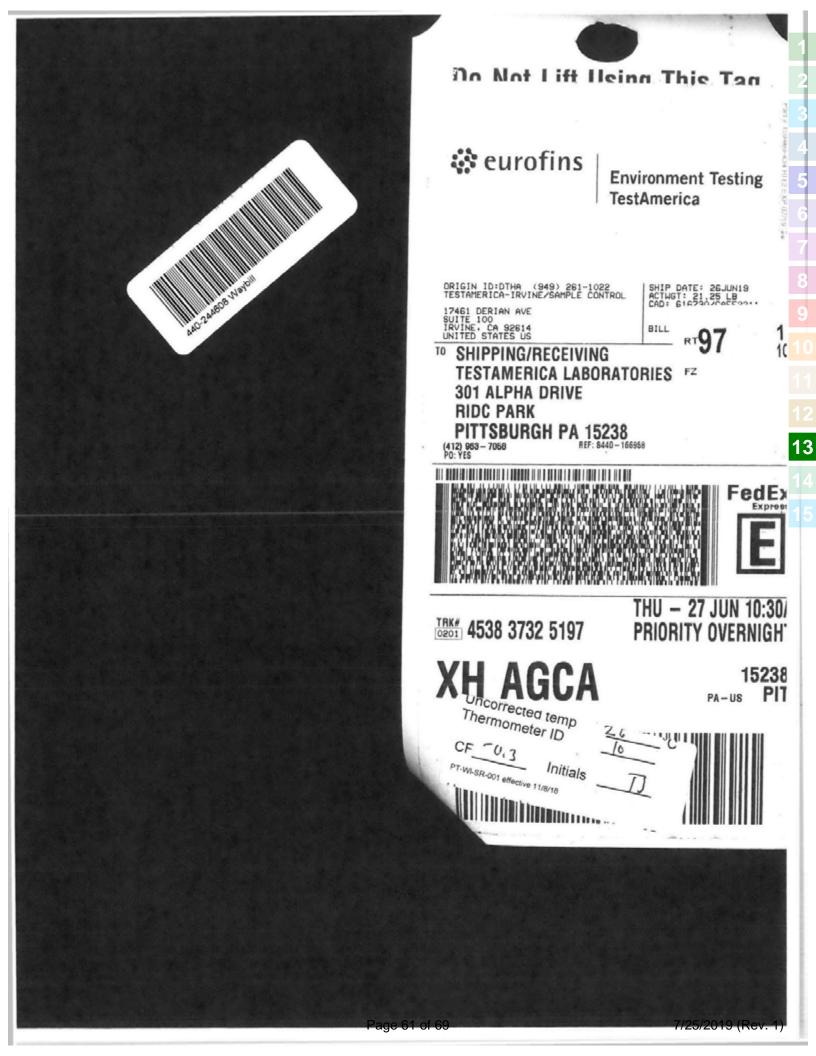
| 001\$      |                    |                 | Þ       | Totals                         |
|------------|--------------------|-----------------|---------|--------------------------------|
|            |                    |                 |         |                                |
| \$25       | 12 kg ea.          | 52" × 12" × 14" | 4       | Water Samples                  |
| əuleV jinU | <b>Weight</b> (kg) | Dimensions      | Coolers | ltem Description<br>(Contents) |

#### :Buiddid2

| * = ********************************** |                      |                           |
|--|----------------------|---------------------------|
|  | fished Cargo Support | <b>Օther</b> (Specify)։   |
| 0                                      |                      | USPS: Priority or Express |
| Tracking #                             |                      | gniqqid2 to sboM          |

#### :oT qid2

| # ənord          | (6+6) 561-1022               |
|------------------|------------------------------|
| City, State, Zip | Irvine, CA 92614-5817        |
| Address          | 17461 Derian Ave., Suite 100 |
| Sontact Name     | Lena Davidkova               |
| Сотралу          | Test America Irvine          |



| Eurofins TestAmerica, Irvine  |  |  |  |   |   |   |  |                              |                             |                            |                             | ofins  |                                |  |
|---|--|--|--|---|---|---|--|------------------------------|-----------------------------|----------------------------|-----------------------------|--|--------------------------------|--|
| 1/401 Denan Ave Suite 100<br>Dirvine, CA 92614-6517<br>Dirvine, CAD 361-1675  | CP   | hain o   | of Cus   | ain of Custody Record   | ecord                                     |   |  |                              |                             |                            |                             |  |                                | Environment Testing<br>TestAmerica                 |
| Client Information (Sub Contract Lab)   | Sampler:   |  |  | Lab PM:<br>Davidk   | Lab PM:<br>Davidkova, Lena                |   | 440-2  | 44608 C                      | 440-244608 Chain of Custody | todv                       |                             | 0381.1   | 5                              |  |
|   | Phone:   |  |  | E-Mait  | avidkoval                                 | Otostameric   | aine com   | 2                            | ICalifornia                 |                            | -                           | Page 1 of 1  |                                |  |
| company.<br>Company:<br>TestAmarica I aboratoriae Inc   |  |  |  |   | Accreditations                            | Accreditations Required (See note):<br>Stata Procram - California | be note):  |                              |                             |                            | Γ                           | Job #:   | .                              |  |
| Address Ribe Bark.<br>301 Aloha Drive. RIDC Park.   | Due Date Requested:<br>7/3/2019  | ÷  |  |   | n2  |   | Analysis Requested                               | s Reque                      | sted                        |                            |                             | Preservation Codes   | Code                           |  |
|   | TAT Requested (days)   | ys):   |  |   |   |   |  |                              |                             | -                          |                             | A - HCL<br>B - NaOH<br>C - Zn Acetate  |                                | M - Hexane<br>N - None<br>O - AsNa02               |
| State, Zo:<br>PA, 15238   |  |  |  |   |   |   |  |                              |                             |                            |                             | D - Nitric Acid<br>E - NaHSO4  |                                | 2045   |
| Phene:<br>412-963-7058(Tel) 412-963-2468(Fax)   | PO#:   |  |  |   | (0  |   |  |                              |                             |                            |                             | F - MeOH<br>G - Amchlor<br>H - Ascorbic A  | S-H<br>S-H<br>T-TS             | R - Na2S203<br>S - H2SO4<br>T - TSP Dodecatvotrate |
| Emait   | WO#:   |  |  |   | (ON                                       |   |  |                              |                             |                            |                             | I - Ice<br>J - Di Water  |                                | U - Acetone<br>V - MCAA                            |
| Project Name:<br>Ocean Disposal WW Sample   | Project #:<br>44022550   |  |  |   | JO SO                                     |   |  |                              | _                           |                            | ionist                      | K-EDTA<br>L-EDA  | W-P                            | W - pH 4-5<br>Z - other (specify)                  |
| Ster  | SSOW#:   |  |  |   | A) as                                     |   |  |                              |                             |                            | of con                      | Other:   |                                |  |
|   |  | Sample   | Sample<br>Type<br>(C=comp.                     | Matrix<br>(www.snotd  | riorm MS/M<br>MS/ Buik Dei                |   |  |                              |                             |                            | redmuN let                  |  |                                |  |
| Sample Identification - Client ID (Lab ID)  | Sample Date  | Time   | G=grab)<br>Preserva                            | BT-Tissue, A-AU   | N b                                       |   |  |                              |                             |                            | 24                          | Speck  | al Instruc                     | Special Instructions/Note:                         |
| 0620 BUTCHER (440-244608-1)   | 6/20/19  | 06:11<br>Dacks                                 |  | Water   | ×   |   |  |                              |                             |                            | -                           |  |                                |  |
| 0620 OD STREAMS (440-244608-2)  | 6/20/19  | 06:33  |  | Water   | ×   | -   | F  | F                            |                             | -                          | -                           |  |                                |  |
| 0621 BUTCHER (440-244608-3)   | 6/21/19  | 06:01<br>Dacific                               |  | Water   | ×   |   | F  | F                            |                             |                            | -                           |  |                                |  |
| 0621 OD STREAMS (440-244608-4)  | 6/21/19  | 06:20<br>Pacific                               |  | Water   | ×   |   | F  | 1                            |                             |                            | -                           |  |                                |  |
|   |  |  |  |   |   |   | -  |                              |                             |                            |                             |  |                                |  |
|   |  |  |  |   |   |   |  |                              |                             |                            |                             |  |                                |  |
|   |  |  |  |   |   |   | _  |                              |                             |                            |                             |  |                                |  |
|   |  |  |  |   |   |   |  |                              |                             |                            |                             |  |                                |  |
|   |  |  |  |   |   |   |  |                              |                             |                            |                             |  |                                |  |
| Note: Since laboratory accreditations are subject to change, TestMmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontact laboratories. This sample shipment is ferwarded under chain-or-custory. If the laboratory does not currently meintain accreditation in the State of Origin Isted above for analysis/betstimatic being analyzed, the samples must be shipped back to the TestAmerica laboratories. Mit be provided. Any changes to accreditation status should be brought to TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica laboratories, inc. | coratories, Inc. places the<br>/thets/matrix being analy<br>intent to date, return the | e ownership o<br>zed, the samp<br>signed Chain | f method, and<br>ples must be<br>of Custody al | hyte & accreditati<br>phipped back to 1<br>besting to said co | on compliand<br>testAmeri<br>mplicance to | e upon out su<br>ca laboratory<br>TestAmerica                     | theomtract lat<br>or other instr<br>Laboratories | boratories.<br>victoris will | his sample s<br>e provided. | hipment is I<br>Any change | forwarded u<br>as to accred | Inder chain-of-o   | custody. If th<br>hould be bro | e laboratory does not<br>ught to TestAmerica       |
| Possible Hazard Identification  |  |  |  |   | Sample                                    | Disposal  | (Afeem   | ay be ass                    | essed If su                 | e saldme                   | re retain                   | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) | tan 1 mon                      | th)  |
| Unconfirmed<br>Deliverable Reguested: L.II. III. IV. Other (specify)  | Primary Deliverable Rank:  | ble Rank:                                      | 2  |   | Soecial                                   | Return To Client Disp<br>Special Instructions/OC Requirements:    | lient<br>s/OC Reg                                | uirements                    | Disposal By Lab             | 0                          | Archi                       | Archive For  | ×                              | Months   |
|   |  |  |  |   |   |   |  |                              | ł                           |                            |                             |  |                                |  |
| Empty Kit Relinquished by   |  | Date:  |  |   | ii ii                                     |   |  |                              | Method of                   | thod of Shipment:          |                             |  |                                |  |
| Reinquished by  | 6/26/10  | 1 6  | 150  | COMPANY   | 2   | Racol Dy:   |  |                              |                             | Date/Time                  | 27                          | 19 Fw  | Con                            | Company  |
| Reinquished by:   | Date/Time: C   |  |  | Company   | Reo                                       | Received by:  |  |                              |                             | Date/Time                  | ~                           |  | Company                        | pany   |
| Relinquished by:  | Date/Time:   |  |  | Company   | Reo                                       | Received by:  |  |                              |                             | Date/Time                  |                             |  | Com                            | Company  |
| Custody Seals Intact: Custody Seal No ::  |  |  |  |   | 8   | Cooler Temperature(s) °C and Other Remarks:                       | re(s) °C and                                     | Other Rem                    | irks:                       |                            |                             |  |                                |  |
| 1   |  |  |  |   |   |   |  |                              |                             |                            |                             |  | Ver                            | Ver: 01/16/2019                                    |

| Irvine  |             |
|---------|-------------|
| nerica, | 000         |
| estAm   | - 0.44      |
| ofins T | and and and |
| Irofi   |             |



| 17461 Derian Ave Suite 100<br>Invine, CA 92614-5817<br>Phone: 949-261-1022 Fax: 949-260-3297   | 0  | chain o  | of Cus  | Chain of Custody Record  | cord   |  |  |                                      |  | Environment Testing<br>TestAmerica  |
|--|--|--|---|--|--|--|--|--------------------------------------|--|---|
| Client Information (Sub Contract Lab)  | Sampler:   |  |   | Lab PM<br>Davidk   | Lab PM<br>Davidkova, Lena                            |  | Carrier Tracking No(s)   | ng No(s):                            | COC No:<br>440-140382.1  |   |
| Client Contact:<br>Shipping/Receiving  | Phone:   |  |   | E-Mait:<br>lena.d  | avidkova@te  | E-Mait:<br>lena.davidkova@testamericainc.com                       | m California   |                                      | Page 1 of 1  |   |
| Company.<br>TestAmerica Laboratories, Inc.   |  |  |   | 207  | conditations Re<br>tate Program                      | Accreditations Required (See note):<br>State Program - California  |  |                                      | Job #:<br>440-244608-1   |   |
| Address:<br>880 Riverside Parkway.   | Due Date Requested:<br>7/3/2019  | :pa  |   |  |  | Analysis   | sis Requested  |                                      | Preservation Codes:  | odes:   |
| City:<br>West Sacramento   | TAT Requested (days):  | ays):  |   |  |  |  |  |                                      | B- NaOH<br>C - Zh Acetate  | N - None<br>0 - AsNa02  |
| State, Zp:<br>CA, 95805  |  |  |   |  |  | _  | _  | _                                    | E - Nario Acid<br>E - Narroot  | P - Na204S<br>Q - Na2SO3  |
| Phone:<br>916-373-5600(Tel) 916-372-1059(Fax)  | ;#04   |  |   |  | 1  | _  | _  | _                                    | G - Amchior<br>G - Amchior<br>H - Ascorbic Acie                                      | R - Na25203<br>S - H2SO4<br>T - TSP Dodocahvdrato   |
|  | :#O#:  |  |   |  | (0)  | _  |  | _                                    |  | U - Acetone<br>V - MCAA   |
| Project Name:<br>Ocean Disposal WW Sample  | Project #:<br>44022550   |  |   |  | 10 68  |  | _  | -                                    | K-EDTA<br>L-EDA  | W - pH 4-5<br>Z - other (specify)   |
| Site.  | SSOWS:   |  |   |  | N) as  |  | _  |                                      | of cor   |   |
| I Mi de la Mi de la Mi de la Mineral de la Mi  | Canacia Data   | Sample   | Sample<br>Type<br>(C=comp,                        | Matrix<br>(www.sweed.  | ield Filtered<br>Perform MS/M<br>MS/2 Presi Nit      |  |  |                                      | otal Number  | and and Materia   |
| Sample Identification - Crient ID (Lab ID)   | Sampie Date  | X  | Preserva  | tion Code:   |  | SALE STORES  | の町の町町町の町町  | Statistics of                        |  | opecial instructionsmore:   |
| 0620 BUTCHER (440-244608-1)  | 6/20/19  | 06:11<br>Pacific                                 |   | Water  | ×  |  |  |                                      | -  |   |
| 0620 OD STREAMS (440-244608-2)   | 6/20/19  | 06:33  |   | Water  | ×  |  |  |                                      | •  |   |
| 0621 BUTCHER (440-244608-3)  | 6/21/19  | 06:01<br>Pacific                                 |   | Water  | ×  |  |  |                                      | 1  |   |
| 0621 OD STREAMS (440-244608-4)   | 6/21/19  | 06:20<br>Pacific                                 |   | Water  | ×  |  |  |                                      | Ŧ  |   |
|  |  |  |   |  |  |  | -  |                                      | 1  |   |
|  |  |  |   |  | -  | -  |  | +                                    |  |   |
|  |  |  |   |  |  |  |  | +                                    |  |   |
|  |  |  |   |  |  |  |  |                                      |  |   |
| Note: Since laboratories are subject to change. TestAmerica Laboratories, inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shament is forwarded under chain-of-custody. If the laboratory does no currently maintain accreditation in the State of Origin listed above for analystabletetishmitric brind analyzed, the samples to shalped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation to state accreditation of the state of Origin listed above for analystabletetishmitric brind to the samples to shalped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, inc. attendion immediatory. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, inc. | rica Laboratories, Inc. places Ib<br>malysisfects/matrix being anal<br>s are current to date, return the | e ownership o<br>rzed, lihe semi<br>signed Chain | f method, and<br>lies must be to<br>of Custody at | liyte & accreditatio<br>shipped back to th<br>itesting to said con | n compliance up<br>TestAmerica li<br>plicance to Tes | oon out subcontract<br>sboratory or other in<br>Mmerica Laboratori | aboratories. This sample<br>tructions will be provided<br>is, Inc. | shipment is forw<br>. Any changes to | arded under chain-of-cust<br>accreditation status shou                               | This sample shipment is forwarded under chain-of-custody. If the laboratory does not<br>be provided. Any changes to accreditation status should be brought to TestArmerica. |
| Possible Hazard Identification   |  |  |   |  | Sample D   | Return To Client   | nay be assessed if sar   | samples are r                        | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) | 1 1 month)<br>Monthe  |
| Deliverable Requested: I, II, III, IV, Other (specify)   | Primary Deliverable Rank: 2  | able Rank:                                       | ~   |  | Special Ins  | Special Instructions/QC Requirements                               | quirements:  |                                      | in course  | CLUD CLUD   |
| Empty Kit Relinquished by:   |  | Date:  |   | -  | Time:  |  | Method   | Method of Shipment.                  |  |   |
| Reinquished by:  | DateTime.  | 1 6  | 1450  | Company  | Receive  | AD CH  | 11   | Date/Time:                           | we 19 093  | 25 Company Sec  |
| Reinquished by:  | Date/Time:   |  |   | Company  | Received by:   | d by:  |  | Date/Time:                           |  | Company   |
| Custody Seals Intact: Custody Seal No .:   |  |  |   |  | Cooler 1   | Cooler Temperature(s) °C and Other Remarks:                        | d Other Remarks:   | 010                                  |  |   |

5

**13** 14

Ver: 01/16/2019

| •       |
|---------|
| -       |
| .=      |
| 5       |
| -       |
| -       |
| _       |
| _       |
| 3       |
| 0       |
| .=      |
| -       |
| db.     |
| =       |
| 5       |
| -       |
|         |
| Test    |
| 10      |
| *       |
| 0       |
| -       |
| -       |
| 10      |
| ns<br>n |
| ~       |
|         |
| -       |
| 0       |
| ~       |
| -       |
| -       |
| ш       |
|         |

-

# 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

# Chain of Custody Record



| Client Information (Sub Contract Lab)   | Sampler:   |  |   | Lab PM<br>David  | Lab PM.<br>Davidkova, Lena                      |   | 8  | Carrier Tracking No(s)           | 0(s):                                  | COC No:<br>440-140383.1  |   |
|---|--|--|---|--|---|---|--|----------------------------------|--|--|---|
| Client Contact<br>Shipping/Receiving  | Phone:   |  |   | E-Mail:<br>liena.d                                       | davidkova@                                      | E-Mait.<br>lena.davidkova@testamericainc.com                      |  | State of Origin:<br>California   |  | Page 1 of 1  |   |
| Company:<br>TestAmerica Laboratories, Inc.  |  |  |   |  | Accreditations<br>State Progr                   | Accreditations Required (See note):<br>State Program - California | (e):   |                                  |  | Job #:<br>440-244608-1   |   |
| Address:<br>5102 LaRoche Avenue.  | Due Date Requested:<br>7/3/2019  | ed:  |   |  |   | Ana   | Analysis Requested   | ested                            |  | Preservation Codes   | des:<br>M - House   |
| Cay:<br>Savannah  | TAT Requested (days  | ays):  |   |  | ple   |   |  |                                  |  | B - NaOH<br>C - Zn Acetate   | N - None<br>0 - AsNa02<br>B - Ma2046  |
| State, Zp:<br>GA, 31404   |  |  |   |  | EJBAO:  |   | _  | _                                | _                                      | E - NaHSO4<br>F - MaCH   | 0 - Na2SO3<br>R - Na2S2O3   |
| Phone:<br>912-354-7858(Tel) 912-352-0165(Fax)   | PO#:   |  |   |  | 20  |   |  | _                                |  | G - Amchior<br>H - Ascorbic Acid   | S - H2SO4<br>T - TSP Dodecahydrate  |
| Emait   | MO#  |  |   |  | (ON   |   | _  | _                                |  |  | U - Acetone<br>V - MCAA   |
| Project Name:<br>Ocean Disposal WW Sample   | Project #:<br>44022550   |  |   |  | 10 50   |   |  |                                  | _                                      | K-EDIA<br>L-EDA  | W - pH 4-5<br>Z - other (specify)   |
| Ste   | SSOWs:   |  |   |  | r) as   | _   | _  |                                  | _                                      | of Other:  |   |
| Sample Identification - Client ID (Lab ID)  | Sample Date  | Sample<br>Time                                   | Sample<br>Type<br>(C=comp,<br>G=grab)             | Matrix<br>(www.s-wide,<br>Orwariek,<br>B1-Town, Arde)    | Heid Field Field<br>M/SM mohed<br>M2011/014/01  |   |  |                                  |  | Total Number<br>Special  | Special Instructions/Note:  |
|   | X  | X  | Preserva  | Preservation Code:                                       | XX  | 102 012 001   | Check Control  |                                  | 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |  | V   |
| 0620 BUTCHER (440-244608-1)   | 6/20/19  | 06:11<br>Pacific                                 |   | Water  | ×   |   |  |                                  |  | 2  |   |
| 0620 OD STREAMS (440-244608-2)  | 6/20/19  | 06:33<br>Pacific                                 |   | Water  | ×   |   |  |                                  |  | 2  |   |
| 0621 BUTCHER (440-244608-3)   | 6/21/19  | 06:01<br>Pacific                                 |   | Water  | ×   |   |  |                                  |  | 2  |   |
| 0621 OD STREAMS (440-244608-4)  | 6/21/19  | 06:20<br>Pacific                                 |   | Water  | ×   |   |  |                                  |  | 2  |   |
|   |  |  |   |  | _   |   | _  |                                  | -                                      | 1  |   |
|   |  |  |   |  | _   |   |  |                                  | -                                      | (1)  |   |
|   |  |  |   |  | _   | _   | -  | _                                | -                                      |  |   |
|   |  |  |   |  |   |   |  |                                  |  |  |   |
|   |  |  |   |  | _   |   | _  |                                  | -                                      |  |   |
| Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample showarded under chain-of-custody. If the laboratory does no<br>currently maxima accreditation in the State of Origin Islee above for analysis/institute being analyzed, the samples that the shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica<br>Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc. | ca Laboratories, Inc. places 1<br>valysis/tests/matrix being anal<br>are current to date, return the | he ownership<br>lyzed, the sam<br>r signed Chain | of method, and<br>ples must be t<br>of Custody at | hyte & accredita<br>thipped back to<br>testing to said o | tion compliant<br>the TestAmen<br>omplicance to | ce upon out subcon<br>sca laboratory or oth<br>TestAmerica Labor  | tract laboratories.<br>Ner instructions will<br>ratories, Inc. | This sample sh<br>be provided. A | ipment is forw<br>my changes to        | arded under chain-of-cush<br>accreditation status shou                               | weership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not<br>d, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica<br>pred Chain of Custody attesting to said complicance to TestAmerica Laboratories. Inc. |
| Possible Hazard Identification  |  |  |   |  | Sample  | e Disposal ( A I  | fee may be as  | sessed if sai                    | mples are                              | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) | 1 month)  |
| Unconfirmed   |  |  |   |  |   | Return To Client  | Dis  | Disposal By Lab                  |  | Archive For  | Months  |
| Deliverable Requested: I, II, III, IV, Other (specify)  | Primary Deliverab  | rable Rank:                                      | 2   |  | Specia  | Special Instructions/QC Requirements                              | C Requirement  | 10                               |  |  |   |
| Empty Kit Relinquished by:  |  | Date:  |   |  | Time:   |   |  | Method of Shipment               | Shipment                               |  |   |
| Reinquished by Mh   | Oato/Time  | 61   | 1450  | Company  | RAV Rec   | Received by:  |  |                                  | Date/Time:                             |  | Company   |
| Reinquished by:   | Date/Time:   |  |   | Company  | Rec   | Received by:  |  |                                  | Date/Time:                             |  | Company   |
|   | Date/Time:   |  |   | Company  | Rec   | Received by   | V  |                                  | C127/15                                | 110 850  | Company   |
| Custody Seals Intact: Custody Seal No.:<br>A Yes A No.  |  |  |   |  | Coo   | Cooler Temperature(s)   | "C and Other Remarks.  | 1                                | 5.0                                    |  |   |
| ALL IN AND IN   |  |  |   |  |   |   |  | 4                                |  |  | Ver 01/16/2019  |

Client: Geosyntec Consultants, Inc.

#### Login Number: 244608 List Number: 1 Creator: Bonta, Lucia F

| Question   | Answer | Comment  |
|--|--------|--|
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td> | True   |  |
| The cooler's custody seal, if present, is intact.  | True   |  |
| Sample custody seals, if present, are intact.  | N/A    | Not Present  |
| The cooler or samples do not appear to have been compromised or tampered with.                             | True   |  |
| Samples were received on ice.  | False  | Thawed blue ice  |
| Cooler Temperature is acceptable.  | False  | Cooler temperature outside required temperature<br>criteria. |
| Cooler Temperature is recorded.  | True   |  |
| COC is present.  | True   |  |
| COC is filled out in ink and legible.  | True   |  |
| COC is filled out with all pertinent information.  | True   |  |
| Is the Field Sampler's name present on COC?  | True   |  |
| There are no discrepancies between the containers received and the COC.                                    | True   |  |
| Samples are received within Holding Time (excluding tests with immediate HTs)                              | True   |  |
| Sample containers have legible labels.   | True   |  |
| Containers are not broken or leaking.  | True   |  |
| Sample collection date/times are provided.   | True   |  |
| Appropriate sample containers are used.  | True   |  |
| Sample bottles are completely filled.  | True   |  |
| Sample Preservation Verified.  | N/A    |  |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs                           | True   |  |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").                            | True   |  |
| Multiphasic samples are not present.   | True   |  |
| Samples do not require splitting or compositing.   | True   |  |
| Residual Chlorine Checked.   | N/A    |  |

Job Number: 440-244608-1

List Source: Eurofins TestAmerica, Irvine

Client: Geosyntec Consultants, Inc.

#### Login Number: 244608 List Number: 2 Creator: Say, Thomas C

| QuestionAnswerCommentRadioactivity wasn't checked or is = background as measured by a survey<br/ meter.TrueTrueThe cooler's custody seal, if present, is intact.TrueTrueSample custody seals, if present, are intact.TrueTrueThe cooler or samples do not appear to have been compromised or<br>tampered with.TrueTrueSamples were received on ice.TrueTrueCooler Temperature is acceptable.TrueTrueCooler Temperature is recorded.TrueTrueCOC is present.TrueTrueCOC is filled out in ink and legible.TrueTrueCOC is filled out with all pertinent information.TrueTrueIs the Field Sampler's name present on COC?TrueTrueThere are no discrepancies between the containers received and the COC.True |
|--|
| meter.TrueThe cooler's custody seal, if present, is intact.TrueSample custody seals, if present, are intact.TrueThe cooler or samples do not appear to have been compromised or<br>tampered with.TrueSamples were received on ice.TrueCooler Temperature is acceptable.TrueCooler Temperature is recorded.TrueCOC is present.TrueCOC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True   |
| Sample custody seals, if present, are intact.TrueThe cooler or samples do not appear to have been compromised or<br>tampered with.TrueSamples were received on ice.TrueCooler Temperature is acceptable.TrueCooler Temperature is recorded.TrueCOC is present.TrueCOC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True  |
| The cooler or samples do not appear to have been compromised or<br>tampered with.TrueSamples were received on ice.TrueCooler Temperature is acceptable.TrueCooler Temperature is recorded.TrueCOC is present.TrueCOC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True   |
| tampered with.TrueSamples were received on ice.TrueCooler Temperature is acceptable.TrueCooler Temperature is recorded.TrueCOC is present.TrueCOC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True  |
| Cooler Temperature is acceptable.TrueCooler Temperature is recorded.TrueCOC is present.TrueCOC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True   |
| Cooler Temperature is recorded.TrueCOC is present.TrueCOC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True  |
| COC is present.TrueCOC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True   |
| COC is filled out in ink and legible.TrueCOC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True  |
| COC is filled out with all pertinent information.TrueIs the Field Sampler's name present on COC?True   |
| Is the Field Sampler's name present on COC? True   |
|  |
| There are no discrementiates between the containers received and the $COC$ True  |
| There are no discrepancies between the containers received and the obo. The  |
| Samples are received within Holding Time (excluding tests with immediate True HTs)   |
| Sample containers have legible labels. True  |
| Containers are not broken or leaking. True   |
| Sample collection date/times are provided. True  |
| Appropriate sample containers are used. True   |
| Sample bottles are completely filled. True   |
| Sample Preservation Verified. True   |
| There is sufficient vol. for all requested analyses, incl. any requested True MS/MSDs  |
| Containers requiring zero headspace have no headspace or bubble is True <6mm (1/4").   |
| Multiphasic samples are not present. True  |
| Samples do not require splitting or compositing. True  |
| Residual Chlorine Checked. N/A   |

Job Number: 440-244608-1

List Creation: 06/27/19 01:48 PM

List Source: Eurofins TestAmerica, Pittsburgh

Client: Geosyntec Consultants, Inc.

Appropriate sample containers are used.

There is sufficient vol. for all requested analyses, incl. any requested

Containers requiring zero headspace have no headspace or bubble is

Sample bottles are completely filled.

Multiphasic samples are not present.

Samples do not require splitting or compositing.

Sample Preservation Verified.

Residual Chlorine Checked.

MS/MSDs

<6mm (1/4").

#### Login Number: 244608 List Number: 3

| Job Number: 440-244608-1                      |    |
|---|----|
| List Source: Eurofins TestAmerica, Sacramento |    |
| List Creation: 06/28/19 09:03 AM              | 5  |
| Comment                                       |    |
|   |    |
|   | 8  |
|   | 9  |
|   |    |
| 0.6c  |    |
|   |    |
| Received project as a subcontract.            | 13 |
|   | 14 |
|   | 15 |

|        | List Creation: 06/28/19 09:03 AM  |
|--------|---|
|        |   |
| Answer | Comment   |
| True   |   |
| N/A    |   |
| N/A    |   |
| True   |   |
| True   |   |
| True   |   |
| True   | 0.6c  |
| True   |   |
| True   |   |
| True   |   |
| N/A    | Received project as a subcontract.  |
| True   |   |
|        | / True<br>N/A<br>N/A<br>True<br>True<br>True<br>True<br>True<br>True<br>True<br>N/A<br>True<br>True<br>True<br>True |

True

True

N/A

True

True

True

True

N/A

#### Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Login Number: 244608

List Number: 4

#### Job Number: 440-244608-1

List Creation: 07/01/19 10:18 AM

List Source: Eurofins TestAmerica, Savannah

|   | ļ |   |  |
|---|---|---|--|
|   |   |   |  |
|   |   |   |  |
|   |   |   |  |
|   |   |   |  |
|   | 8 | 3 |  |
|   |   | 9 |  |
|   |   |   |  |
|   |   |   |  |
|   |   |   |  |
|   |   |   |  |
| 1 |   | 2 |  |
|   |   |   |  |

Creator: Flanagan, Naomi V Answer Comment Question Radioactivity wasn't checked or is </= background as measured by a survey meter. The cooler's custody seal, if present, is intact. Sample custody seals, if present, are intact. The cooler or samples do not appear to have been compromised or tampered with. Samples were received on ice. Cooler Temperature is acceptable. Cooler Temperature is recorded. COC is present. COC is filled out in ink and legible. COC is filled out with all pertinent information. Is the Field Sampler's name present on COC? There are no discrepancies between the containers received and the COC. Samples are received within Holding Time (excluding tests with immediate HTs) Sample containers have legible labels. Containers are not broken or leaking. Sample collection date/times are provided. Appropriate sample containers are used. Sample bottles are completely filled. Sample Preservation Verified. There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). Multiphasic samples are not present. Samples do not require splitting or compositing.

Residual Chlorine Checked.

| Environment Testing<br>TestAmerica     | Sacramento<br>Sample Receiving Notes  |
|--|---|
| 440-244608 Field Sheet                 | Tracking #: <u>U5383732</u> <u>5201</u><br>SO(P) / FO / 2-Day / Ground / UPS / CDO / Courier<br>GSO / OnTrac / Goldstreak / USPS / Other<br>dy Seal, Temperature & corrected Temperature & other observations.  |
| in the job folder with the COC. Notes: | Therm. ID:       IAL-1D       Corr. Factor:         Ice       Wet       Gel       Other         Cooler Custody Seal:  |
|  | Cooler ID:<br>Temp Observed: 0.6°C<br>From: Temp Blank D Sample D<br>NCM Filed: Yes D No D  |
|  | YesNoNAPerchlorate has headspace?<br>(Methods 314, 331, 6850)□□Alkalinity has no headspace?□□CoC is complete w/o discrepancies?□□Samples received within holding time?□□Sample preservatives verified?□□Cooler compromised/tampered with?□□Samples compromised/tampered with?□□Samples w/o discrepancies?□□Sample containers have legible labels?□□Containers are not broken or leaking?□□Sample bottles are completely filled?□□Zero headspace?*□□Multiphasic samples are not present?□□Sample temp OK?□□Sample out of temp?□□ |

IITACORPICORPIQAIQA\_FACILITIES\SACRAMENTO-QAIDOCUMENT-MANAGEMENT\FORMS\QA-812 SAMPLE RECEIVING NOTES.DOC QA-812 TGT 06/19/2019

#### **Ocean Disposal Wastewater Sample Validation**

#### July 23, 2019

#### Laboratory Report 440-244608-1

#### **Introduction:**

The samples were reported to the method detection limit (MDL) and validated at a Stage 2A level. The samples were received outside of the 0-6 degree Celsius (°C) temperature range at 11.5 °C, 11.9 °C, 12.1 °C, and 16.5 °C. Qualifications were applied to the majority of the data based on the temperature exceedance indicating that the reported values are considered estimated (J) or the non-detect values are considered as estimated less than the MDL (UJ). The metals data were unaffected by the temperature exceedances. Additionally, a subset of the non-detect volatile organic compounds and non-detect nitrite, nitrate, and nitrate/nitrite results were R qualified as rejected due to holding time exceedances. The remaining data are considered usable within the limitation of the qualifications. The results for the associated laboratory quality control (QC) samples e.g. method blanks and laboratory control samples, were within the laboratory acceptance for all of the tests listed below. Batch matrix spike/matrix spike duplicate pairs were reported with the data. Since these were batch QC the results had no impact on the project samples and qualifications were not applied to the data based on these results.

#### Method 8260 B Volatile Qualifications

#### **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius, significant head space)

2 = holding times (pH was greater than 2 and analyzed greater than 7 days past collection

| Sample ID    | Analytical | Analyte         | Laboratory | Units | Validated/Qualified | Reason |
|--------------|------------|-----------------|------------|-------|---------------------|--------|
|              | Test       |                 | Result     |       | Result*             | Code** |
| 0620 BUTCHER | 8260B      | 1,2-            |            |       |                     |        |
|              |            | Dichloropropane | 0.25 U     | ug/L  | 0.25 UJ             | 1      |
|              |            | Benzene         | 0.83 J     | ug/L  | 0.83 J              | 1      |
|              |            | Chloroform      | 0.25 U     | ug/L  | 0.25 UJ             | 1      |
|              |            | Ethylbenzene    | 1.6 J      | ug/L  | 1.6 J               | 1      |
|              |            | m,p-Xylene      | 0.50 U     | ug/L  | 0.25 UJ             | 1      |
|              |            | Methylene       |            |       |                     |        |
|              |            | Chloride        | 1.1 U      | ug/L  | 0.50 UJ             | 1      |
|              |            | o-Xylene        | 0.25 U     | ug/L  | 0.25 UJ             | 1      |
|              |            | Toluene         | 0.5 J      | ug/L  | 0.5 J               | 1      |
|              |            | Xylenes, Total  | 0.25 U     | ug/L  | 0.25 UJ             | 1      |
| 0620 OD      |            | 1,2-            |            |       |                     | 1,2    |
| STREAMS      |            | Dichloropropane | 2.5 U      | ug/L  | 2.5 R               |        |
|              |            | Benzene         | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Chloroform      | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Ethylbenzene    | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | m,p-Xylene      | 5 U        | ug/L  | 5 R                 | 1,2    |
|              |            | Methylene       |            |       |                     | 1,2    |
|              |            | Chloride        | 11 U       | ug/L  | 11 R                |        |
|              |            | o-Xylene        | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Toluene         | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Xylenes, Total  | 2.5 U      | ug/L  | 2.5 R               | 1,2    |

| Sample ID    | Analytical | Analyte         | Laboratory | Units | Validated/Qualified | Reason |
|--------------|------------|-----------------|------------|-------|---------------------|--------|
| _            | Test       |                 | Result     |       | Result*             | Code** |
| 0621 BUTCHER | 8260B      | 1,2-            |            |       |                     | 1      |
|              |            | Dichloropropane | 0.25 U     | ug/L  | 0.25 UJ             |        |
|              |            | Benzene         | 1.2 J      | ug/L  | 1.2 J               | 1      |
|              |            | Chloroform      | 0.25 U     | ug/L  | 0.25 UJ             | 1      |
|              |            | Ethylbenzene    | 3.4        | ug/L  | 3.4 J               | 1      |
|              |            | m,p-Xylene      | 0.50 U     | ug/L  | 0.50 UJ             | 1      |
|              |            | Methylene       |            |       |                     | 1      |
|              |            | Chloride        | 1.1 U      | ug/L  | 1.1 UJ              |        |
|              |            | o-Xylene        | 0.25 U     | ug/L  | 0.25 UJ             | 1      |
|              |            | Toluene         | 1.1 J      | ug/L  | 1.1 J               | 1      |
|              |            | Xylenes, Total  | 0.25 U     | ug/L  | 0.25 UJ             | 1      |
| 0621 OD      | 8260B      | 1,2-            |            |       |                     | 1,2    |
| STREAMS      |            | Dichloropropane | 2.5 U      | ug/L  | 2.5 R               |        |
|              |            | Benzene         | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Chloroform      | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Ethylbenzene    | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | m,p-Xylene      | 5 U        | ug/L  | 5 R                 | 1,2    |
|              |            | Methylene       |            |       |                     | 1,2    |
|              |            | Chloride        | 11 U       | ug/L  | 11 R                |        |
|              |            | o-Xylene        | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Toluene         | 2.5 U      | ug/L  | 2.5 R               | 1,2    |
|              |            | Xylenes, Total  | 2.5 U      | ug/L  | 2.5 R               | 1,2    |

\*Validation qualifier definitions are included in Attachment 1 of this report

\*\*Reason code definitions are included in Attachment 2 of this report

ug/L – microgram per liter

U – the analyte was not detected at or above the reported value

J -laboratory flag; result is less than the reporting limit but greater than the method detection limit and the concentration is an approximate value.

#### Method 625 Semi-Volatiles Qualifications

#### **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius)

| 2 = holding times ( | pH was greater than | 2 and analyzed greater than | 7 days past collection |
|---------------------|---------------------|-----------------------------|------------------------|
|---------------------|---------------------|-----------------------------|------------------------|

| Sample ID    | Analytical | Analyte           | Laboratory | Units | Validated/Qualified | Reason Code |
|--------------|------------|-------------------|------------|-------|---------------------|-------------|
|              | Test       |                   | Result     |       | Result              |             |
| 0620 BUTCHER | 625        | Bis(2-ethylhexyl) |            |       |                     |             |
|              |            | phthalate         | 40 U       | ug/L  | 40 UJ               | 1           |
| 0620 OD      | 625        | Bis(2-ethylhexyl) |            |       |                     | 1           |
| STREAMS      |            | phthalate         | 179 U      | ug/L  | 179 UJ              |             |
| 0621 BUTCHER | 625        | Bis(2-ethylhexyl) |            |       |                     | 1           |
|              |            | phthalate         | 82 U       | ug/L  | 82 UJ               |             |
| 0621 OD      | 625        | Bis(2-ethylhexyl) |            |       |                     | 1           |
| STREAMS      |            | phthalate         | 170 U      | ug/L  | 170 UJ              |             |

ug/L – microgram per liter

U - the analyte was not detected at or above the reported value

#### Method 8315 Carbonyl Compounds Qualifications

#### **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius)

2= holding time exceedance

| Sample ID    | Analytical | Analyte      | Laboratory | Units | Validated/Qualified | Reason Code |
|--------------|------------|--------------|------------|-------|---------------------|-------------|
|              | Test       |              | Result     |       | Result              |             |
| 0620 BUTCHER | 8315       | Formaldehyde |            |       |                     |             |
|              |            |              | 0.052 H    | mg/L  | 0.052 J             | 1,2         |
| 0620 OD      | 8315       | Formaldehyde |            |       |                     | 1,2         |
| STREAMS      |            |              | 0.080 H    | mg/L  | 0.080 J             |             |
| 0621 BUTCHER | 8315       | Formaldehyde | 0.051 H    | mg/L  | 0.051 J             | 1,2         |
| 0621 OD      | 8315       | Formaldehyde |            |       |                     | 1,2         |
| STREAMS      |            | _            | 0.069 H    | mg/L  | 0.069 J             |             |

ug/L – microgram per liter

H – Lab flag; Sample was prepped or analyzed beyond the specified holding time

#### Method 6010B Metals Qualifications - None

Method 7470A Mercury Qualifications - None

#### Wet Chemistry Parameters

#### **Reason Code**

1 = preservation (received outside of temperature >10 degrees Celsius and pH >2 upon receipt, COD and HEM)

| Sample ID    | Analytical | Analyte            | Laboratory | Units | Validated/Qualified | Reason Code |
|--------------|------------|--------------------|------------|-------|---------------------|-------------|
|              | Test       |                    | Result     |       | Result              |             |
| 0620 BUTCHER | 1664A      | HEM                | 330        | mg/L  | 330 J               | 1           |
|              | 351.2      | Total Kjeldahl     |            | mg/L  |                     | 1           |
|              |            | Nitrogen           | 1000       |       | 1000 J              |             |
|              | 353.2      | Nitrate Nitrite as | 0.31 U     | mg/L  | 0.31 UJ             | 1           |
|              | 365.3      | Phosphorous,       | 100        | mg/L  | 100 J               | 1           |
|              | 420.1      | Phenolics, Total   | 0.10       | mg/L  | 0.10                | 1           |
|              | 4500 CN E  | Cyanide, Total     | 0.013 U    | mg/L  | 0.013 UJ            | 1           |
|              |            | Ammonia (as N)     | 62         | mg/L  | 62 J                | 1           |
|              | 4500 NH3   | Ammonia as         | 75         | mg/L  | 75 J                | 1           |
|              | 5220D      | Chemical           | 12000      | mg/L  | 12000 J             | 1           |
|              | 2540E      | Total Volatile     | 12000      | mg/L  | 12000 J             | 1           |
|              | 2540B      | Total Solids       | 17000      | mg/L  | 17000 J             | 1           |
|              |            | Total Nitrogen     | 1000       | mg/L  | 1000 J              | 1           |
| 0620 OD      | 1664A      | HEM                | 6370       | mg/L  | 6370 J              | 1           |
| STREAMS      | 351.2      | Total Kjeldahl     |            | mg/L  |                     | 1           |
|              |            | Nitrogen           | 3700       |       | 3700 J              |             |
|              | 353.2      | Nitrate Nitrite as |            | mg/L  |                     | 1           |
|              |            | Ν                  | 0.31 U     |       | 0.31 UJ             |             |
|              | 365.3      | Phosphorous,       |            | mg/L  |                     | 1           |
|              |            | Total              | 550        |       | 550 J               |             |
|              | 420.1      | Phenolics, Total   |            | mg/L  |                     | 1           |
|              |            | Recoverable        | 7.2        |       | 7.2 J               |             |

| Sample ID    | Analytical | Analyte            | Laboratory | Units | Validated/Qualified | Reason Code |
|--------------|------------|--------------------|------------|-------|---------------------|-------------|
|              | Test       |                    | Result     |       | Result              |             |
|              | 4500 CN E  | Cyanide, Total     | 0.045      | mg/L  | 0.045 J             | 1           |
|              |            | Ammonia (as N)     | 1800       | mg/L  | 1800 J              | 1           |
|              | 4500 NH3   | Ammonia as         |            | mg/L  |                     | 1           |
|              | D          | NH3                | 2200       | -     | 2200 J              |             |
|              | 5220D      | Chemical           |            | mg/L  |                     | 1           |
|              |            | Oxygen Demand      | 74000      |       | 74000 J             |             |
|              | 2540E      | Total Volatile     |            | mg/L  |                     | 1           |
|              |            | Solids             | 21000      |       | 21000 J             |             |
|              | 2540B      | Total Solids       | 35000      | mg/L  | 35000 J             | 1           |
|              |            | Total Nitrogen     | 3700       | mg/L  | 3700 J              | 1           |
| 0621 BUTCHER | 1664A      | HEM                | 633        | mg/L  | 633 J               | 1           |
|              | 351.2      | Total Kjeldahl     |            | mg/L  |                     | 1           |
|              |            | Nitrogen           | 570        |       | 570 J               |             |
|              | 353.2      | Nitrate Nitrite as |            | mg/L  |                     | 1           |
|              |            | Ν                  | 0.31 U     |       | 0.31 UJ             |             |
|              | 365.3      | Phosphorous,       |            | mg/L  |                     | 1           |
|              |            | Total              | 130        |       | 130 J               |             |
|              | 420.1      | Phenolics, Total   |            | mg/L  |                     | 1           |
|              |            | Recoverable        | 0.087      |       | 0.087 J             |             |
|              | 4500 CN E  | Cyanide, Total     | 0.013 U    | mg/L  | 0.013 UJ            | 1           |
|              |            | Ammonia (as N)     | 120        | mg/L  | 120 J               | 1           |
|              | 4500 NH3   | Ammonia as         |            | mg/L  |                     | 1           |
|              | D          | NH3                | 140        |       | 140 J               |             |
|              | 5220D      | Chemical           |            | mg/L  |                     | 1           |
|              |            | Oxygen Demand      | 11000      |       | 11000 J             |             |
|              | 2540E      | Total Volatile     |            | mg/L  |                     | 1           |
|              |            | Solids             | 7700       |       | 7700 J              |             |
|              | 2540B      | Total Solids       | 11000      | mg/L  | 11000 J             | 1           |
|              |            | Total Nitrogen     | 570        | mg/L  | 570 J               | 1           |
|              | 1664A      | HEM                | 7090       | mg/L  | 7090 J              | 1           |

| Sample ID | Analytical | Analyte            | Laboratory | Units | Validated/Qualified | Reason Code |
|-----------|------------|--------------------|------------|-------|---------------------|-------------|
| -         | Test       | -                  | Result     |       | Result              |             |
| 0621 OD   | 351.2      | Total Kjeldahl     |            | mg/L  |                     | 1           |
| STREAMS   |            | Nitrogen           | 4000       |       | 4000 J              |             |
|           | 353.2      | Nitrate Nitrite as |            | mg/L  |                     | 1           |
|           |            | Ν                  | 0.31 U     |       | 0.31 UJ             |             |
|           | 365.3      | Phosphorous,       | 980        | mg/L  | 980 J               | 1           |
|           |            | Total              |            |       |                     |             |
|           | 420.1      | Phenolics, Total   |            | mg/L  |                     | 1           |
|           |            | Recoverable        | 11         |       | 11 J                |             |
|           | 4500 CN E  | Cyanide, Total     | 0.037      | mg/L  | 0.037 J             | 1           |
|           |            | Ammonia (as N)     | 2200       | mg/L  | 2200 J              | 1           |
|           | 4500 NH3   | Ammonia as         |            | mg/L  |                     | 1           |
|           | D          | NH3                | 2600       |       | 2600 J              |             |
|           | 5220D      | Chemical           |            | mg/L  |                     | 1           |
|           |            | Oxygen Demand      | 65000      |       | 65000 J             |             |
|           | 2540E      | Total Volatile     |            | mg/L  |                     | 1           |
|           |            | Solids             | 16000      | _     | 16000 J             |             |
|           | 2540B      | Total Solids       | 31000      | mg/L  | 31000 J             | 1           |
|           |            | Total Nitrogen     | 4000       | mg/L  | 4000 J              | 1           |

mg/L – milligram per liter

U – the analyte was not detected at or above the reported value

J -laboratory flag; result is less than the reporting limit but greater than the method detection limit and the concentration is an approximate value.

#### Method NO3NO2 Calc - Nitrogen, Nitrate-Nitrite Qualifications

#### **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius)

2= holding time exceedance

| Sample ID    | Analytical | Analyte              | Laboratory | Units | Validated/Qualified | Reason Code |
|--------------|------------|----------------------|------------|-------|---------------------|-------------|
|              | Test       |                      | Result     |       | Result              |             |
| 0620 BUTCHER | NO3NO2     | Nitrate as N         | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
|              | Calc       | Nitrite as N         |            | mg/L  |                     | 1,2         |
|              |            | Nitrate Nitrite as N | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
| 0620 OD      | NO3NO2     | Nitrate as N         | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |
| STREAMS      | Calc       | Nitrite as N         | 2.5 U H    | mg/L  | 2.5 R               | 1,2         |
|              |            | Nitrate Nitrite as N | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |
| 0621 BUTCHER | NO3NO2     | Nitrate as N         | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
|              | Calc       | Nitrite as N         | 0.50 U H   | mg/L  | 0.50 R              | 1,2         |
|              |            | Nitrate Nitrite as N | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
| 0621 OD      | NO3NO2     | Nitrate as N         | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |
| STREAMS      | Calc       | Nitrite as N         | 2.5 U H    | mg/L  | 2.5 R               | 1,2         |
|              |            | Nitrate Nitrite as N |            | mg/L  | 5.5 R               | 1,2         |

mg/L – milligram per liter

U – the analyte was not detected at or above the reported value

H - Lab flag; Sample was prepped or analyzed beyond the specified holding time

#### ATTACHMENT 1 DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY Assigned by Geosyntec's Data Validation Team

#### **DATA QUALIFIER DEFINITIONS**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.
- J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

#### ATTACHMENT 2 DATA VALIDATION REASON CODES Assigned by Geosyntec's Data Validation Team

| Valid Value | Description   |
|-------------|---|
| 1           | Preservation requirement not met                            |
| 2           | Analysis holding time exceeded                              |
| 3           | Blank contamination (i.e., method, trip, equipment, etc.)   |
|             | Matrix spike/matrix spike duplicate recovery or RPD outside |
| 4           | limits  |
| 5           | LCS recovery outside limits                                 |
| 6           | Surrogate recovery outside limits                           |
| 7           | Field Duplicate RPD exceeded                                |
| 8           | Serial dilution percent difference exceeded                 |
| 9           | Calibration criteria not met                                |
| 10          | Linear range exceeded                                       |
| 11          | Internal standard criteria not met                          |
| 12          | Lab duplicates RPD exceeded                                 |
| 13          | Other   |

RPD-relative percent difference

# 🔅 eurofins

# Environment Testing TestAmerica

# **ANALYTICAL REPORT**

### Eurofins TestAmerica, Irvine 17461 Derian Ave

Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

#### Laboratory Job ID: 440-245042-1

Client Project/Site: Ocean Disposal WW Sample Revision: 1

#### For:

Geosyntec Consultants, Inc. 295 Hagey Blvd. Suite 290 Waterloo, Ontario N2L 6R5

Attn: Nick Butson

Authorized for release by: 7/31/2019 12:03:48 PM

Lena Davidkova, Project Manager II (949)260-3229 Iena.davidkova@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Review your project results through

LINKS



Visit us at: www.testamericainc.com

# **Table of Contents**

| Cover Page             | 1  |
|------------------------|----|
| Table of Contents      | 2  |
| Sample Summary         | 3  |
| Case Narrative         | 4  |
| Client Sample Results  | 9  |
| Method Summary         | 20 |
| Lab Chronicle          | 21 |
| QC Sample Results      | 27 |
| QC Association Summary | 45 |
| Definitions/Glossary   | 54 |
| Certification Summary  | 56 |
| Subcontract Data       | 60 |
| Chain of Custody       | 86 |
| Receipt Checklists     | 93 |
| Field Data Sheets      | 98 |
|                        |    |

#### Sample Summary

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-245042-1

| Lab Sample ID | Client Sample ID | Matrix | Collected      | Received       |
|---------------|------------------|--------|----------------|----------------|
| 0-245042-1    | 06 25 BUTCH      | Water  | 06/25/19 08:15 | 07/02/19 10:10 |
| 0-245042-2    | 06 25 OD STREAMS | Water  | 06/25/19 08:24 | 07/02/19 10:10 |
| 40-245042-3   | 06 25 BUTCH DUP  | Water  | 06/25/19 08:15 | 07/02/19 10:10 |
| 40-245042-4   | BUTCHER          | Water  | 06/26/19 06:06 | 07/02/19 10:10 |
| 0-245042-5    | OD STREAMS       | Water  | 06/26/19 06:19 | 07/02/19 10:10 |
| 10-245042-6   | BUTCHER          | Water  | 06/27/19 06:09 | 07/02/19 10:10 |
| 40-245042-7   | OD STREAMS       | Water  | 06/27/19 06:22 | 07/02/19 10:10 |

## Job ID: 440-245042-1

#### Laboratory: Eurofins TestAmerica, Irvine

Narrative

Job Narrative 440-245042-1

#### Comments

This it final report. Pyrethrins results were included under this cover

#### Receipt

The samples were received on 7/2/2019 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 18.1° C, 18.3° C, 20.5° C, 20.6° C, 20.6° C, 21.4° C and 26.0° C.

#### **Receipt Exceptions**

The following samples were received at the laboratory outside the required temperature criteria: 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7). Received samples on thawed blue ice. The temperatures recorded were 20.9/20.6 ,21.7/21.4,18.6/18.3,18.4/18.1,20.8/20.5,20.9/20.6 IR 94 outside the required temperature criteria.

The following sample(s) was received with headspace in the sample container. This sample container was received with headspace. 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7). All voa vials HCL that were received have headspace more than 6 mm including sample # 4 and # 5.

#### GC/MS VOA

Method(s) 8260B: The sample was collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was 7 and the following sample was analyzed after 7 days from sampling: 06 25 OD STREAMS (440-245042-2).

Method(s) 8260B: The following sample was diluted due to the abundance of non-target analytes: 06 25 OD STREAMS (440-245042-2). Elevated reporting limits (RLs) are provided.

Method(s) 8260B: The laboratory control sample (LCS) for analytical batch 440-556388 recovered outside control limits for the following analyte: Ethylbenzene. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method(s) 8260B: Internal standard (ISTD) response for TBA-d9 for the following sample was outside acceptance criteria: (CCVIS 440-556388/2). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

Method(s) 8260B: The following volatile samples were received and analyzed with significant headspace in the sample container(s): 06 25 OD STREAMS (440-245042-2) and 06 25 BUTCH DUP (440-245042-3). Significant headspace is defined as a bubble greater than 6 mm in diameter. All VOA vials had headspace.

Method(s) 8260B: The sample was collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was 7 and the following samples were analyzed after 7 days from sampling: OD STREAMS (440-245042-5) and OD STREAMS (440-245042-7).

Method(s) 8260B: The following volatile sample was received and analyzed with significant headspace in the sample container(s): OD STREAMS (440-245042-5). Significant headspace is defined as a bubble greater than 6 mm in diameter. All VOA vials had headspace.

Method(s) 8260B: The following samples were diluted due to the abundance of non-target analytes: OD STREAMS (440-245042-5) and OD STREAMS (440-245042-7). Elevated reporting limits (RLs) are provided.

Method(s) 8260B: The matrix spike / matrix spike duplicate (MS/MSD) precision for analytical batch 440-556394 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected.

Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 440-556543 recovered above the upper control limit for Chloroform and 1,2-Dichloropropane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the

#### Laboratory: Eurofins TestAmerica, Irvine (Continued)

data have been reported. The following samples are impacted: 06 25 BUTCH (440-245042-1) and (CCVIS 440-556543/3).

Method(s) 8260B: \*The following volatile samples were received and analyzed with significant headspace in the sample vials: 06 25 BUTCH (440-245042-1) and 06 25 BUTCH DUP (440-245042-3). Significant headspace is defined as a bubble greater than 6 mm in diameter. All VOA vials had headspace.

Method(s) 8260B: Surrogate 4-Bromofluorobenzene recovery for the following sample was outside the upper control limits: 06 25 BUTCH (440-245042-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8260B: The following volatile samples were received and analyzed with significant headspace in the sample container(s): BUTCHER (440-245042-4) and BUTCHER (440-245042-6). Significant headspace is defined as a bubble greater than 6 mm in diameter.

Method(s) 8260B: Surrogate 4-Bromofluorobenzene recovery for the following sample(s) was outside the upper control limits: BUTCHER (440-245042-6). Re-analysis was performed with concurring results. This analysis has been reported.

Method(s) 8260B: Internal standard (ISTD) 1,4-Dichlorobenzene-d4 response for the following sample(s) was outside the lower control limits: BUTCHER (440-245042-6). The sample(s) was re-analyzed with concurring results, this set of data has been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC/MS Semi VOA

Method(s) 625: The following samples were diluted due to the abundance of non-target analytes: 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7). Elevated reporting limits (RLs) are provided.

Method(s) 625: The following samples required a dilution due to the nature of the sample matrix: 06 25 OD STREAMS (440-245042-2), OD STREAMS (440-245042-5) and OD STREAMS (440-245042-7). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### HPLC/IC

Method(s) 300.0: The following samples were diluted due to the nature of the sample matrix: 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7). Elevated reporting limits (RLs) are provided. Due to fishy samples.

Method(s) NO3NO2 Calc: The following samples were received outside of holding time for Nitrate Nitrite as N: 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Metals

The reference method requires samples to be preserved to a pH of <2. The following samples were received with insufficient preservation at a pH of 4 and 6: 06 25 BUTCH DUP (440-245042-3) and OD STREAMS (440-245042-5). The sample(s) was preserved to the appropriate pH in the laboratory.

Method(s) 6010B: The continuing calibration blank (CCB) for 440-556566 contained Titanium above the method detection limit (MDL). This target analyte concentration was less than the reporting limit (RL).(CCB 440-556566/15), (CCB 440-556566/27), (CCB 440-556566/39) and (CCB 440-556566/51)

Method(s) 6010B: The method blank for preparation batch 440-556431 and analytical batch 440-556566 contained Chromium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

#### Laboratory: Eurofins TestAmerica, Irvine (Continued)

Method(s) 6010B: The serial dilution performed for the following sample associated with batch 440-556566 was outside control limits for Magnesium, Manganese and Titanium: (440-245154-J-1-A SD ^5)

Method(s) 6010B: The post digestion spike % recovery for Manganese and Titanium associated with batch 440-556566 was outside of control limits.

Method(s) 6010B: The following samples were diluted due to the nature of the sample matrix: 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), OD STREAMS (440-245042-5) and OD STREAMS (440-245042-7). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **General Chemistry**

Method(s) 353.2: The following samples were diluted in analytical batch 320-306826 due to the nature of the sample matrix: 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7). Samples were a dark brown color, had high sediment, and were extremely difficult to filter Elevated reporting limits (RLs) are provided. Data is being reported with this narration.

Method(s) 365.3: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-556226 and analytical batch 440-556268 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) SM 5220D: The reference method requires samples to be preserved to a pH of <2. The following samples were received with insufficient preservation at a pH of 7: 06 25 OD STREAMS (440-245042-2) and OD STREAMS (440-245042-7). The sample(s) was preserved to the appropriate pH in the laboratory.

Method(s) Distill/Phenol: Sample was received with a pH of >2. Container was preserved with sulfuric acid, then prepped for analysis.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **Organic Prep**

Method(s) 8315\_W\_Prep: The following samples were received outside of holding time: 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7). Method 8315

Method(s) 8315\_W\_Prep: Sample received was cloudy red color, strong odor with residue with pH of 7. After added DNPH to make the color change initial reaction was murky brown. Method 8315 06 25 BUTCH (440-245042-1)

Method(s) 8315\_W\_Prep: Sample received was cloudy green color strong odor with pH of 7. Adjusted pH of 3. After added DNPH to make the color change initial reaction was murky green. Method 8315 06 25 OD STREAMS (440-245042-2)

Method(s) 8315\_W\_Prep: sample received was cloudy red color strong odor with pH of 7. After added DNPH to make the color change initial reaction was murky brown. Method 8315 06 25 BUTCH DUP (440-245042-3)

Method(s) 8315\_W\_Prep: Sample received was cloudy red color strong odor with pH of 7. After added DNPH to make the color change initial reaction was murky brown. Method 8315 BUTCHER (440-245042-4)

Method(s) 8315\_W\_Prep: Sample received was cloudy olive green color strong odor with pH of 7. Adjusted pH of 3. After added DNPH to make the color change initial reaction was murky yellow. Method 8315 OD STREAMS (440-245042-5)

#### Laboratory: Eurofins TestAmerica, Irvine (Continued)

Method(s) 8315\_W\_Prep: Sample received was cloudy red pink color strong odor with residue with pH of 7. After added DNPH to make the color change initial reaction was murky brown. Method 8315 BUTCHER (440-245042-6)

Method(s) 8315\_W\_Prep: Sample received was cloudy green color strong odor with pH of 7. Adjusted pH of 3. After added DNPH to make the color change initial reaction was murky yellow. Method 8315 OD STREAMS (440-245042-7)

Method(s) 8315\_W\_Prep: The following samples were diluted due to the nature of the sample matrix: 20 mL. Elevated reporting limits (RLs) are provided. Method 8315

Method(s) 8315\_W\_Prep: Sample was cloudy light pink color strong odor with residue. After added DNPH to make the color change initial reaction was murky yellow. Heavy emulsion. Method 8315 06 25 BUTCH (440-245042-1)

Method(s) 8315\_W\_Prep: Sample was cloudy light green color strong odor. Adjusted pH of 3. After added DNPH to make the color change initial reaction was murky yellow.Heavy emulsion. Method 8315 06 25 OD STREAMS (440-245042-2)

Method(s) 8315\_W\_Prep: Sample was cloudy light pink color strong odor. After added DNPH to make the color change initial reaction was murky yellow. Heavy emulsion. Method 8315 06 25 BUTCH DUP (440-245042-3)

Method(s) 8315\_W\_Prep: Sample was cloudy light brown color strong odor. After added DNPH to make the color change initial reaction was murky yellow. Heavy emulsion. Method 8315 BUTCHER (440-245042-4)

Method(s) 8315\_W\_Prep: sample was cloudy light green color strong odor. Adjusted pH of 3. After added DNPH to make the color change initial reaction was murky yellow. Heavy emulsion. Method 8315 OD STREAMS (440-245042-5)

Method(s) 8315\_W\_Prep: Sample was cloudy light brown color strong odor with residue. After added DNPH to make the color change initial reaction was murky yellow. Heavy emulsion. Method 8315 BUTCHER (440-245042-6)

Method(s) 8315\_W\_Prep: Sample was cloudy light green color strong odor. Adjusted pH of 3. After added DNPH to make the color change initial reaction was murky yellow. Heavy emulsion. Method 8315 OD STREAMS (440-245042-7)

Method(s) 625: The following samples were diluted due to the abundance of non-target analytes: 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5) and OD STREAMS (440-245042-7) at 100 ml. Elevated reporting limits (RLs) are provided. Method 625-REG. LCS was performed in duplicate to provide precision of data.

Method(s) 625: The following sample was diluted due to the abundance of non-target analytes: BUTCHER (440-245042-6) at 200 ml. Elevated reporting limits (RLs) are provided. Method 625-REG.

Method(s) 625: The following samples were prepared outside of preparation holding time : 06 25 BUTCH (440-245042-1), 06 25 OD STREAMS (440-245042-2), 06 25 BUTCH DUP (440-245042-3), BUTCHER (440-245042-4), OD STREAMS (440-245042-5), BUTCHER (440-245042-6) and OD STREAMS (440-245042-7).

Method(s) 3520C, 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 8270 preparation batch 440-556176. LCS was performed in duplicate to maintain precision of data.

Method(s) 1664A, 1664B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated

### Laboratory: Eurofins TestAmerica, Irvine (Continued)

with preparation batch 440-556396 and analytical batch 440-556472.1664 The Laboratory Control Sample (LCS) was performed in duplicate to provide precision data for this batch

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

## Client Sample ID: 06 25 BUTCH Date Collected: 06/25/19 08:15 Date Received: 07/02/19 10:10

| Job | ١D· | 440-245042-1 |
|-----|-----|--------------|
| 000 | ID. | TTU-2TUUT2-1 |

#### Lab Sample ID: 440-245042-1 Matrix: Water

Matrix: Water

5

| Method: 8260B - Volatile Or<br>Analyte |              | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil F |
|--|--------------|-----------|----------|--------|------|---|----------------|----------------|-------|
| ,2-Dichloropropane                     | ND           |           | 2.0      | 0.25   | ug/L |   |                | 07/09/19 05:59 |       |
| Benzene                                | 2.0          |           | 2.0      | 0.25   | ug/L |   |                | 07/09/19 05:59 |       |
| Chloroform                             | ND           |           | 2.0      | 0.25   | ug/L |   |                | 07/09/19 05:59 |       |
| Ethylbenzene                           | 10           |           | 2.0      | 0.25   | ug/L |   |                | 07/09/19 05:59 |       |
| n,p-Xylene                             | ND           |           | 2.0      |        | ug/L |   |                | 07/09/19 05:59 |       |
| Methylene Chloride                     | ND           |           | 5.0      |        | ug/L |   |                | 07/09/19 05:59 |       |
| p-Xylene                               | ND           |           | 2.0      |        | ug/L |   |                | 07/09/19 05:59 |       |
| <b>Foluene</b>                         | 0.81         | J         | 2.0      |        | ug/L |   |                | 07/09/19 05:59 |       |
| Kylenes, Total                         | ND           | •         | 2.0      |        | ug/L |   |                | 07/09/19 05:59 |       |
| Surrogate                              | %Recovery    | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil I |
| -Bromofluorobenzene (Surr)             | 134          | X         | 80 - 120 |        |      |   |                | 07/09/19 05:59 |       |
| Dibromofluoromethane (Surr)            | 111          |           | 76 - 132 |        |      |   |                | 07/09/19 05:59 |       |
| oluene-d8 (Surr)                       | 110          |           | 80 - 128 |        |      |   |                | 07/09/19 05:59 |       |
| Method: 625 - Semivolatile (           | Organic Com  | oounds (G | C/MS)    |        |      |   |                |                |       |
| Analyte                                | Result       | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil F |
| Bis(2-ethylhexyl) phthalate            | ND           | Н         | 400      | 80     | ug/L |   | 07/05/19 08:23 | 07/09/19 07:20 |       |
| urrogate                               | %Recovery    | Qualifier | Limits   |        |      |   | Prepared       | Analyzed       | Dil   |
| -Fluorobiphenyl                        | 88           |           | 50 - 120 |        |      |   | 07/05/19 08:23 | 07/09/19 07:20 |       |
| -Fluorophenol                          | 97           |           | 30 - 120 |        |      |   | 07/05/19 08:23 | 07/09/19 07:20 |       |
| ,4,6-Tribromophenol                    | 71           |           | 40 - 120 |        |      |   | 07/05/19 08:23 | 07/09/19 07:20 |       |
| litrobenzene-d5                        | 97           |           | 45 - 120 |        |      |   | 07/05/19 08:23 | 07/09/19 07:20 |       |
| Ferphenyl-d14                          | 49           |           | 10 - 150 |        |      |   | 07/05/19 08:23 | 07/09/19 07:20 |       |
| Phenol-d6                              | 109          |           | 35 - 120 |        |      |   | 07/05/19 08:23 | 07/09/19 07:20 |       |
| Method: 8315A - Carbonyl C             | Compounds (H | HPLC)     |          |        |      |   |                |                |       |
| Analyte                                | Result       | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil F |
| Formaldehyde                           | 0.091        | Н         | 0.050    | 0.025  | mg/L |   | 07/03/19 08:09 | 07/03/19 16:53 |       |
| Method: NO3NO2 Calc - Niti             |              |           |          |        |      |   |                |                |       |
| Analyte                                | Result       | Qualifier | RL       | MDL    | Unit | D | Prepared       | Analyzed       | Dil F |
| litrate as N                           | ND           | Н         | 2.2      | 1.1    | mg/L |   |                | 07/09/19 16:07 |       |
| litrite as N                           | ND           | Н         | 3.0      | 0.50   | mg/L |   |                | 07/09/19 16:07 |       |
| litrate Nitrite as N                   | ND           | Н         | 3.0      | 1.1    | mg/L |   |                | 07/09/19 16:07 |       |
| Nethod: 6010B - Metals (ICF            |              |           |          |        |      |   |                |                |       |
| nalyte                                 |              | Qualifier | RL       |        | Unit | D | Prepared       | Analyzed       | Dil I |
| luminum                                | 0.38         |           | 0.10     | 0.050  | -    |   | 07/03/19 08:03 | 07/05/19 12:09 |       |
| Arsenic                                | 0.16         |           | 0.010    | 0.0089 | mg/L |   | 07/03/19 08:03 | 07/05/19 12:09 |       |
| Barium                                 | 0.014        |           | 0.010    | 0.0050 | mg/L |   | 07/03/19 08:03 | 07/05/19 12:09 |       |
| Boron                                  | 0.13         |           | 0.050    | 0.025  | mg/L |   | 07/03/19 08:03 | 07/05/19 12:09 |       |
| Cadmium                                | 0.042        |           | 0.0050   | 0.0025 | mg/L |   | 07/03/19 08:03 | 07/05/19 12:09 |       |
| Chromium                               | 0.029        |           | 0.0050   | 0.0025 | -    |   | 07/03/19 08:03 | 07/05/19 12:09 |       |
| Copper                                 | 0.053        |           | 0.010    | 0.0050 |      |   | 07/03/19 08:03 |                |       |
| lagnesium                              | 26           |           | 0.020    | 0.010  | -    |   | 07/03/19 08:03 |                |       |
| langanese                              | 0.018        | J         | 0.020    | 0.015  | -    |   | 07/03/19 08:03 |                |       |
| lickel                                 | 0.015        |           | 0.010    | 0.0050 |      |   | 07/03/19 08:03 |                |       |
|  |              |           |          | 0.0087 | -    |   | 07/03/19 08:03 |                |       |
| Selenium                               | 0.13         |           | 0.010    |        | mali |   |                |                |       |

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

## Client Sample ID: 06 25 BUTCH Date Collected: 06/25/19 08:15 Date Received: 07/02/19 10:10

| Method: 6010B - Metals (ICP) -    | Total Reco | overable (C | ontinued) |        |         |   |                |                |         |
|-----------------------------------|------------|-------------|-----------|--------|---------|---|----------------|----------------|---------|
| Analyte                           | Result     | Qualifier   | RL        | MDL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Zinc                              | 1.1        |             | 0.020     | 0.012  | mg/L    |   | 07/03/19 08:03 | 07/05/19 12:09 | 1       |
| _<br>Method: 7470A - Mercury (CVA | AA)        |             |           |        |         |   |                |                |         |
| Analyte                           |            | Qualifier   | RL        | MDL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Mercury                           | 0.0039     |             | 0.0020    | 0.0010 | mg/L    |   | 07/05/19 13:01 | 07/06/19 10:40 | 10      |
| _<br>General Chemistry            |            |             |           |        |         |   |                |                |         |
| Analyte                           | Result     | Qualifier   | RL        | MDL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| HEM                               | 79.2       |             | 5.4       | 1.5    | mg/L    |   | 07/08/19 06:52 | 07/08/19 13:23 | 1       |
| Total Kjeldahl Nitrogen           | 750        |             | 50        | 25     | mg/L    |   | 07/05/19 14:00 | 07/09/19 21:47 | 5       |
| Nitrate Nitrite as N              | ND         |             | 5.0       | 0.31   | mg/L    |   |                | 07/10/19 11:13 | 100     |
| Phosphorus, Total                 | 63         |             | 25        | 13     | mg/L    |   | 07/05/19 18:05 | 07/06/19 13:33 | 1       |
| Phenolics, Total Recoverable      | 0.14       |             | 0.050     | 0.025  | mg/L    |   | 07/09/19 12:53 | 07/09/19 17:37 | 1       |
| Cyanide, Total                    | ND         |             | 0.025     | 0.013  | mg/L    |   | 07/03/19 10:24 | 07/03/19 12:39 | 1       |
| Ammonia (as N)                    | 82         |             | 25        | 5.0    | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Ammonia as NH3                    | 100        |             | 30        | 6.0    | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Chemical Oxygen Demand            | 8600       |             | 400       | 200    | mg/L    |   |                | 07/10/19 16:46 | 20      |
| Analyte                           | Result     | Qualifier   | RL        | RL     | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Total Volatile Solids             | 7100       |             | 200       | 200    | mg/L    |   |                | 07/02/19 19:36 | 1       |
| Specific Gravity                  | 0.98       |             | 0.010     | 0.010  | No Unit |   |                | 07/10/19 15:21 | 1       |
| Total Solids                      | 10000      |             | 200       | 200    | mg/L    |   |                | 07/02/19 19:36 | 1       |
| Nitrogen, Total                   | 750        |             | 0.11      | 0.11   | mg/L    |   |                | 07/11/19 15:16 | 1       |

#### Client Sample ID: 06 25 OD STREAMS Date Collected: 06/25/19 08:24 Date Received: 07/02/19 10:10

| Analyte                     | Result    | Qualifier | RL       | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|-----|------|---|----------|----------------|---------|
| 1,2-Dichloropropane         | ND        |           | 10       | 1.3 | ug/L |   |          | 07/08/19 17:00 | 5       |
| Benzene                     | ND        |           | 10       | 1.3 | ug/L |   |          | 07/08/19 17:00 | 5       |
| Chloroform                  | ND        |           | 10       | 1.3 | ug/L |   |          | 07/08/19 17:00 | 5       |
| Ethylbenzene                | ND        | *         | 10       | 1.3 | ug/L |   |          | 07/08/19 17:00 | 5       |
| m,p-Xylene                  | ND        |           | 10       | 2.5 | ug/L |   |          | 07/08/19 17:00 | 5       |
| Methylene Chloride          | ND        |           | 25       | 5.5 | ug/L |   |          | 07/08/19 17:00 | 5       |
| o-Xylene                    | ND        |           | 10       | 1.3 | ug/L |   |          | 07/08/19 17:00 | 5       |
| Toluene                     | ND        |           | 10       | 1.3 | ug/L |   |          | 07/08/19 17:00 | 5       |
| Xylenes, Total              | ND        |           | 10       | 1.3 | ug/L |   |          | 07/08/19 17:00 | 5       |
| Surrogate                   | %Recovery | Qualifier | Limits   |     |      |   | Prepared | Analyzed       | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 99        |           | 80 - 120 |     |      |   |          | 07/08/19 17:00 | 5       |
| Dibromofluoromethane (Surr) | 100       |           | 76 - 132 |     |      |   |          | 07/08/19 17:00 | 5       |
| Toluene-d8 (Surr)           | 103       |           | 80 - 128 |     |      |   |          | 07/08/19 17:00 | 5       |

| Method: 625 - Semivolatile  | Organic Com | oounds (G | C/MS)    |     |      |   |                |                |         |
|-----------------------------|-------------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Analyte                     | Result      | Qualifier | RL       | MDL | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Bis(2-ethylhexyl) phthalate | ND          | Н         | 2000     | 400 | ug/L |   | 07/05/19 08:23 | 07/09/19 07:44 | 10      |
| Surrogate                   | %Recovery   | Qualifier | Limits   |     |      |   | Prepared       | Analvzed       | Dil Fac |
|                             | ,, j        |           | Emmeo    |     |      |   | ricpurcu       | Analyzea       | Birruc  |
| 2-Fluorobiphenyl            | 103         |           | 50 - 120 |     |      |   |                | 07/09/19 07:44 | 10      |

Eurofins TestAmerica, Irvine

Matrix: Water

5

12 13

## Lab Sample ID: 440-245042-1 Matrix: Water

Lab Sample ID: 440-245042-2

7/31/2019 (Rev. 1)

### Client Sample ID: 06 25 OD STREAMS Date Collected: 06/25/19 08:24 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-2 **Matrix: Water**

5

| Surrogate                    | %Recovery    | Qualifier | Limits   |        |         |   | Prepared       | Analyzed       | Dil Fa |
|------------------------------|--------------|-----------|----------|--------|---------|---|----------------|----------------|--------|
| 2,4,6-Tribromophenol         |              |           | 40 - 120 |        |         |   | 07/05/19 08:23 | 07/09/19 07:44 | 1      |
| Vitrobenzene-d5              | 106          |           | 45 - 120 |        |         |   |                | 07/09/19 07:44 |        |
| Terphenyl-d14                | 40           |           | 10 - 150 |        |         |   |                | 07/09/19 07:44 | 1      |
| Phenol-d6                    | 73           |           | 35 - 120 |        |         |   |                | 07/09/19 07:44 | 1      |
|                              |              |           |          |        |         |   |                |                | -      |
| Method: 8315A - Carbonyl C   | ompounds (H  | HPLC)     |          |        |         |   |                |                |        |
| Analyte                      |              | Qualifier | RL       | MDL    |         | D | Prepared       | Analyzed       | Dil Fa |
| Formaldehyde                 | 0.096        | Н         | 0.050    | 0.025  | mg/L    |   | 07/03/19 08:09 | 07/03/19 17:14 |        |
| Method: NO3NO2 Calc - Nitro  | ogon Nitrato | -Nitrito  |          |        |         |   |                |                |        |
| Analyte                      |              | Qualifier | RL       | MDL    | Unit    | D | Prepared       | Analyzed       | Dil Fa |
| vitrate as N                 |              |           | 1        | 5.5    | mg/L    |   |                | 07/09/19 16:07 |        |
| Nitrite as N                 | ND           | Н         | 15       |        | mg/L    |   |                | 07/09/19 16:07 |        |
| Nitrate Nitrite as N         | ND           | н         | 15       |        | mg/L    |   |                | 07/09/19 16:07 |        |
|                              |              |           |          |        | 0       |   |                |                |        |
| Method: 6010B - Metals (ICP  | •            |           |          |        |         |   |                |                |        |
| Analyte                      |              | Qualifier | RL       | MDL    |         | D | Prepared       | Analyzed       | Dil Fa |
| Numinum                      | 180          |           | 1.0      |        | mg/L    |   |                | 07/08/19 18:23 |        |
| Arsenic                      | 0.27         |           | 0.10     | 0.089  | 0       |   |                | 07/08/19 18:23 |        |
| Barium                       | 0.063        |           | 0.10     | 0.050  |         |   |                | 07/08/19 18:23 |        |
| Boron                        | 0.32         | J         | 0.50     |        | mg/L    |   |                | 07/08/19 18:23 |        |
| Cadmium                      | 0.077        |           | 0.050    | 0.025  | 0       |   |                | 07/08/19 18:23 |        |
| Chromium                     | 0.080        | В         | 0.050    | 0.025  |         |   |                | 07/08/19 18:23 |        |
| Copper                       | 0.22         |           | 0.10     | 0.050  | 0       |   |                | 07/08/19 18:23 |        |
| lagnesium                    | 100          |           | 0.20     |        | mg/L    |   |                | 07/08/19 18:23 |        |
| langanese                    | ND           |           | 0.20     |        | mg/L    |   |                | 07/08/19 18:23 |        |
| lickel                       | 0.054        | J         | 0.10     | 0.050  | 0       |   |                | 07/08/19 18:23 |        |
| Selenium                     | 0.20         |           | 0.10     | 0.087  | -       |   |                | 07/08/19 18:23 |        |
| itanium                      | 0.18         |           | 0.050    | 0.025  | 0       |   |                | 07/08/19 18:23 |        |
| linc                         | 11           |           | 0.20     | 0.12   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:23 |        |
| Method: 7470A - Mercury (C)  |              |           |          |        |         |   |                |                |        |
| nalyte                       |              | Qualifier | RL       | MDL    | Unit    | D | Prepared       | Analyzed       | Dil F  |
| lercury                      | 0.0023       |           | 0.0020   | 0.0010 | mg/L    |   | 07/05/19 13:01 | 07/06/19 10:43 |        |
| Seneral Chemistry            |              |           |          |        |         |   |                |                |        |
| nalyte                       | Result       | Qualifier | RL       | MDL    | Unit    | D | Prepared       | Analyzed       | Dil F  |
| IEM                          | 11.2         |           | 5.3      |        | mg/L    |   | 07/08/19 06:52 | •              |        |
| otal Kjeldahl Nitrogen       | 3700         |           | 100      |        | mg/L    |   |                | 07/09/19 21:47 |        |
| litrate Nitrite as N         | ND           |           | 5.0      |        | mg/L    |   |                | 07/10/19 11:23 | 1      |
| hosphorus, Total             | 570          |           | 100      |        | mg/L    |   | 07/05/19 12:08 | 07/05/19 14:39 |        |
| Phenolics, Total Recoverable | 2.5          |           | 0.50     |        | mg/L    |   | 07/09/19 12:53 |                |        |
| Syanide, Total               | 0.018        | J         | 0.025    | 0.013  | -       |   |                | 07/03/19 12:39 |        |
| Ammonia (as N)               | 1700         |           | 250      |        | mg/L    |   |                | 07/05/19 06:00 |        |
| Ammonia as NH3               | 2100         |           | 300      |        | mg/L    |   |                | 07/05/19 06:00 |        |
| Chemical Oxygen Demand       | 51000        |           | 5000     |        | mg/L    |   |                | 07/10/19 16:46 | 2      |
| Analyte                      |              | Qualifier | RL       |        | Unit    | D | Prepared       | Analyzed       | Dil F  |
| otal Volatile Solids         | 15000        |           | 500      |        | mg/L    |   |                | 07/02/19 19:36 |        |
| Specific Gravity             | 1.0          |           | 0.010    |        | No Unit |   |                | 07/10/19 15:19 |        |
| Fotal Solids                 | 33000        |           | 500      |        | mg/L    |   |                | 07/02/19 19:36 |        |

## **Client Sample Results**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-245042-1

| Client Sample ID: 06 25<br>Date Collected: 06/25/19 08:2<br>Date Received: 07/02/19 10:1 | 24              | MS        |                   |       |              | La | b Sample       | ID: 440-245<br>Matrix      |        |
|--|-----------------|-----------|-------------------|-------|--------------|----|----------------|----------------------------|--------|
| General Chemistry (Contin  |                 | Qualifian |                   |       | 11           |    | Duran and      | Amelyneed                  |        |
| Analyte<br>Nitrogen, Total   |                 | Qualifier | <b>RL</b><br>0.11 |       | Unit<br>mg/L | D  | Prepared       | Analyzed<br>07/11/19 15:16 | Dil Fa |
|  | 5700            |           | 0.11              | 0.11  | mg/L         |    |                | 07/11/19 13.10             |        |
| Client Sample ID: 06 25  | <b>BUTCH DU</b> | Ρ         |                   |       |              | La | b Sample       | ID: 440-245                | 5042-3 |
| Date Collected: 06/25/19 08:<br>Date Received: 07/02/19 10:1                             | 15              |           |                   |       |              |    |                | Matrix                     |        |
| Method: 8260B - Volatile O   |                 |           | MS)               |       |              |    |                |                            |        |
| Analyte  |                 | Qualifier | RL                | MDL   |              | D  | Prepared       | Analyzed                   | Dil Fa |
| 1,2-Dichloropropane  | ND              |           | 2.0               |       | ug/L         |    |                | 07/08/19 17:29             |        |
| Benzene  | 1.5             | J         | 2.0               |       | ug/L         |    |                | 07/08/19 17:29             |        |
| Chloroform   | ND              |           | 2.0               |       | ug/L         |    |                | 07/08/19 17:29             |        |
| m,p-Xylene   | ND              |           | 2.0               |       | ug/L         |    |                | 07/08/19 17:29             |        |
| Methylene Chloride   | ND              |           | 5.0               | 1.1   | ug/L         |    |                | 07/08/19 17:29             |        |
| o-Xylene   | ND              |           | 2.0               |       | ug/L         |    |                | 07/08/19 17:29             |        |
| Toluene  | 0.67            | J         | 2.0               |       | ug/L         |    |                | 07/08/19 17:29             |        |
| Xylenes, Total   | ND              |           | 2.0               | 0.25  | ug/L         |    |                | 07/08/19 17:29             |        |
| Surrogate  | %Recovery       | Qualifier | Limits            |       |              |    | Prepared       | Analyzed                   | Dil Fa |
| 4-Bromofluorobenzene (Surr)  | 119             |           | 80 - 120          |       |              |    |                | 07/08/19 17:29             |        |
| Dibromofluoromethane (Surr)  | 99              |           | 76 - 132          |       |              |    |                | 07/08/19 17:29             |        |
| Toluene-d8 (Surr)  | 113             |           | 80 - 128          |       |              |    |                | 07/08/19 17:29             |        |
|  |                 |           |                   |       |              |    |                |                            |        |
| Method: 8260B - Volatile O   |                 |           |                   | MDI   | 11           |    | Durananad      | A seals sead               |        |
| Analyte  |                 | Qualifier | RL                | MDL   |              | D  | Prepared       | Analyzed                   | Dil Fa |
| Ethylbenzene   | 5.6             |           | 2.0               | 0.25  | ug/L         |    |                | 07/09/19 06:29             |        |
| Surrogate  | %Recovery       | Qualifier | Limits            |       |              |    | Prepared       | Analyzed                   | Dil Fa |
| 4-Bromofluorobenzene (Surr)  |                 | ·         | 80 - 120          |       |              |    | <b>·</b>       | 07/09/19 06:29             |        |
| Dibromofluoromethane (Surr)  | 112             |           | 76 - 132          |       |              |    |                | 07/09/19 06:29             |        |
| Toluene-d8 (Surr)  | 109             |           | 80 - 128          |       |              |    |                | 07/09/19 06:29             |        |
| Method: 625 - Semivolatile   | Organic Com     | oounds (G | C/MS)             |       |              |    |                |                            |        |
| Analyte  |                 | Qualifier | RL                | MDL   | Unit         | D  | Prepared       | Analyzed                   | Dil Fa |
| Bis(2-ethylhexyl) phthalate  | ND              | Н         | 400               | 80    | ug/L         |    | 07/05/19 08:23 | 07/09/19 08:09             |        |
| Surrogate  | %Recovery       | Qualifier | Limits            |       |              |    | Prepared       | Analyzed                   | Dil Fa |
| 2-Fluorobiphenyl   | 93              |           | 50 - 120          |       |              |    | 07/05/19 08:23 | -                          |        |
| 2-Fluorophenol   | 95              |           | 30 - 120          |       |              |    |                | 07/09/19 08:09             |        |
| 2,4,6-Tribromophenol   | 79              |           | 40 - 120          |       |              |    |                | 07/09/19 08:09             |        |
| Nitrobenzene-d5  | 99              |           | 45 - 120          |       |              |    |                | 07/09/19 08:09             |        |
| Terphenyl-d14  | 41              |           | 10 - 150          |       |              |    |                | 07/09/19 08:09             |        |
| Phenol-d6  | 118             |           | 35 - 120          |       |              |    |                | 07/09/19 08:09             |        |
| Method: 8315A - Carbonyl (   |                 |           |                   |       |              |    |                |                            |        |
| Analyte  |                 | Qualifier | RL                | MDL   |              | D  | Prepared       | Analyzed                   | Dil Fa |
| Formaldehyde   | 0.057           | н         | 0.050             | 0.025 | mg/L         | _  | 07/03/19 08:09 | 07/03/19 17:35             |        |
| Method: NO3NO2 Calc - Nit  |                 |           |                   |       |              |    |                |                            |        |
| Analyte  |                 | Qualifier | RL                | MDL   |              | D  | Prepared       | Analyzed                   | Dil Fa |
| Nitrate as N   | ND              |           | 2.2               |       | mg/L         | _  |                | 07/09/19 16:07             |        |
| Nitrite as N   | ND              |           | 3.0               | 0.50  | mg/L         |    |                | 07/09/19 16:07             |        |
| Nitrate Nitrite as N   | ND              |           | 3.0               |       | mg/L         |    |                | 07/09/19 16:07             |        |

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

## Client Sample ID: 06 25 BUTCH DUP Date Collected: 06/25/19 08:15 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-3 **Matrix: Water**

5

| Analyte                      | Result | Qualifier | RL     | MDL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
|------------------------------|--------|-----------|--------|--------|---------|---|----------------|----------------|---------|
| Aluminum                     | ND     |           | 2.0    | 1.0    | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Arsenic                      | 0.23   |           | 0.20   | 0.18   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Barium                       | ND     |           | 0.20   | 0.10   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Boron                        | ND     |           | 1.0    | 0.50   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Cadmium                      | 0.084  | J         | 0.10   | 0.050  | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Chromium                     | 0.060  | JB        | 0.10   | 0.050  | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Copper                       | ND     |           | 0.20   | 0.10   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Magnesium                    | 55     |           | 0.40   | 0.20   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Manganese                    | ND     |           | 0.40   | 0.30   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Nickel                       | ND     |           | 0.20   | 0.10   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Selenium                     | 0.17   | J         | 0.20   | 0.17   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Titanium                     | 0.064  | J         | 0.10   | 0.050  | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Zinc                         | 2.1    |           | 0.40   | 0.24   | mg/L    |   | 07/08/19 09:56 | 07/08/19 18:33 | 10      |
| Method: 7470A - Mercury (CVA | AA)    |           |        |        |         |   |                |                |         |
| Analyte                      |        | Qualifier | RL     | MDL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Mercury                      | 0.0034 |           | 0.0020 | 0.0010 | mg/L    |   | 07/05/19 13:01 | 07/06/19 10:45 | 10      |
| General Chemistry            |        |           |        |        |         |   |                |                |         |
| Analyte                      | Result | Qualifier | RL     | MDL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| HEM                          | 203    |           | 5.3    | 1.5    | mg/L    |   | 07/08/19 06:52 | 07/08/19 13:23 | 1       |
| Total Kjeldahl Nitrogen      | 820    |           | 50     | 25     | mg/L    |   | 07/05/19 14:00 | 07/10/19 17:40 | 5       |
| Nitrate Nitrite as N         | 10     |           | 5.0    | 0.31   | mg/L    |   |                | 07/10/19 11:27 | 100     |
| Phosphorus, Total            | 66     |           | 25     | 13     | mg/L    |   | 07/05/19 18:05 | 07/06/19 13:33 | 1       |
| Phenolics, Total Recoverable | 0.18   |           | 0.050  | 0.025  | mg/L    |   | 07/09/19 12:53 | 07/09/19 17:41 | 1       |
| Cyanide, Total               | ND     |           | 0.025  | 0.013  | mg/L    |   | 07/03/19 10:24 | 07/03/19 12:39 | 1       |
| Ammonia (as N)               | 82     |           | 25     | 5.0    | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Ammonia as NH3               | 100    |           | 30     | 6.0    | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Chemical Oxygen Demand       | 9100   |           | 1000   | 500    | mg/L    |   |                | 07/10/19 16:46 | 50      |
| Analyte                      |        | Qualifier | RL     |        | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Total Volatile Solids        | 5600   |           | 200    |        | mg/L    |   |                | 07/02/19 19:36 | 1       |
| Specific Gravity             | 0.98   |           | 0.010  |        | No Unit |   |                | 07/10/19 15:18 | 1       |
| Total Solids                 | 8500   |           | 200    |        | mg/L    |   |                | 07/02/19 19:36 | 1       |
| Nitrogen, Total              | 820    |           | 0.11   |        | mg/L    |   |                | 07/11/19 15:16 | 1       |

#### **Client Sample ID: BUTCHER** Date Collected: 06/26/19 06:06 Date Received: 07/02/19 10:10

| Lab Sample ID: | 440-245042-4  |
|----------------|---------------|
|                | Matrix: Water |

o-Xylene

Toluene

Xylenes, Total

| Method: 8260B - Volatile |        |           | S)  |      |      |   |          |
|--------------------------|--------|-----------|-----|------|------|---|----------|
| Analyte                  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared |
| 1,2-Dichloropropane      | ND     |           | 2.0 | 0.25 | ug/L |   |          |
| Benzene                  | 0.93   | J         | 2.0 | 0.25 | ug/L |   |          |
| Chloroform               | ND     |           | 2.0 | 0.25 | ug/L |   |          |
| Ethylbenzene             | 1.2    | J         | 2.0 | 0.25 | ug/L |   |          |
| m,p-Xylene               | ND     |           | 2.0 | 0.50 | ug/L |   |          |
| Methylene Chloride       | ND     |           | 5.0 | 1.1  | ug/L |   |          |

ND

ND

0.33 J

Eurofins TestAmerica, Irvine

Analyzed

07/09/19 09:28

07/09/19 09:28

07/09/19 09:28

07/09/19 09:28

07/09/19 09:28

07/09/19 09:28

07/09/19 09:28

07/09/19 09:28

07/09/19 09:28

Dil Fac

1

1

1

1

1

1

1

1

1

2.0

2.0

2.0

0.25 ug/L

0.25 ug/L

0.25 ug/L

## Client Sample ID: BUTCHER Date Collected: 06/26/19 06:06 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-4 Matrix: Water

| Surrogate  | %Recovery  | Qualifier           | Limits   |  |  |          | Prepared  | Analyzed   | Dil Fac   |
|--|--|---------------------|--|--|--|----------|---|--|---|
| 4-Bromofluorobenzene (Surr)  | 119  |                     | 80 - 120   |  |  |          |   | 07/09/19 09:28   | 1   |
| Dibromofluoromethane (Surr)  | 112  |                     | 76 - 132   |  |  |          |   | 07/09/19 09:28   | 1   |
| Toluene-d8 (Surr)  | 104  |                     | 80 - 128   |  |  |          |   | 07/09/19 09:28   | 1   |
| _<br>Method: 625 - Semivolatile  | organic Com  | oounds (G           | C/MS)  |  |  |          |   |  |   |
| Analyte  | Result   | Qualifier           | RL   | MDL  | Unit   | D        | Prepared  | Analyzed   | Dil Fac   |
| Bis(2-ethylhexyl) phthalate  | ND   | Н                   | 400  | 80   | ug/L   |          | 07/05/19 08:23  | 07/09/19 08:33   | 2   |
| Surrogate  | %Recovery  | Qualifier           | Limits   |  |  |          | Prepared  | Analyzed   | Dil Fac   |
| 2-Fluorobiphenyl   | 95   |                     | 50 - 120   |  |  |          | 07/05/19 08:23  | 07/09/19 08:33   | 2   |
| 2-Fluorophenol   | 95   |                     | 30 - 120   |  |  |          | 07/05/19 08:23  | 07/09/19 08:33   | 2   |
| 2,4,6-Tribromophenol   | 100  |                     | 40 - 120   |  |  |          | 07/05/19 08:23  | 07/09/19 08:33   | 2   |
| Nitrobenzene-d5  | 104  |                     | 45 - 120   |  |  |          | 07/05/19 08:23  | 07/09/19 08:33   | 2   |
| Terphenyl-d14  | 41   |                     | 10 - 150   |  |  |          |   | 07/09/19 08:33   | 2   |
| Phenol-d6<br>_   | 96   |                     | 35 - 120   |  |  |          | 07/05/19 08:23  | 07/09/19 08:33   | 2   |
| Method: 8315A - Carbonyl   |  |                     |  |  |  |          |   |  |   |
| Analyte  |  | Qualifier           | RL   |  | Unit   | D        | Prepared  | Analyzed   | Dil Fac   |
| Formaldehyde   | 0.052  | н                   | 0.050  | 0.025  | mg/L   | _        | 07/03/19 08:09  | 07/03/19 17:56   | 1   |
| Method: NO3NO2 Calc - N  |  |                     |  |  |  |          |   |  |   |
| Analyte  |  | Qualifier           | RL   |  | Unit   | D        | Prepared  | Analyzed   | Dil Fac   |
| Nitrate as N   | ND   |                     | 1.1  |  | mg/L   |          |   | 07/09/19 16:07   | 1   |
| Nitrite as N   | ND   | Н                   | 1.5  |  | mg/L   |          |   | 07/09/19 16:07   | 1   |
| Nitrate Nitrite as N   | ND   | Н                   | 1.5  | 0.55   | mg/L   |          |   | 07/09/19 16:07   | 1   |
| Method: 6010B - Metals (IC   |  |                     |  |  | 1114   | -        | Due   | A wak  |   |
| Analyte  |  | Qualifier           | RL   |  | Unit   | D        | Prepared  | Analyzed   | Dil Fac   |
|  |  |                     |  |  |  |          |   |  |   |
| Aluminum   | 0.20   |                     | 0.10   | 0.050  | -  |          | 07/03/19 08:03  | 07/05/19 12:11   | 1   |
| Arsenic  | 0.083  |                     | 0.010  | 0.0089   | mg/L   |          | 07/03/19 08:03  | 07/05/19 12:11   | 1   |
| Arsenic<br>Barium  | 0.083<br>0.0085  | J                   | 0.010<br>0.010   | 0.0089<br>0.0050   | mg/L<br>mg/L   |          | 07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11   | 1   |
| Arsenic<br>Barium<br>Boron   | 0.083<br>0.0085<br>0.090   | J                   | 0.010<br>0.010<br>0.050  | 0.0089<br>0.0050<br>0.025  | mg/L<br>mg/L<br>mg/L   |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1   |
| Arsenic<br>Barium<br>Boron<br>Cadmium  | 0.083<br>0.0085<br>0.090<br>0.018  | J                   | 0.010<br>0.010<br>0.050<br>0.0050  | 0.0089<br>0.0050<br>0.025<br>0.0025  | mg/L<br>mg/L<br>mg/L<br>mg/L                                 |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1  |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098  | J                   | 0.010<br>0.010<br>0.050<br>0.0050<br>0.0050  | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L                         |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1   |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031   | J                   | 0.010<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010   | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025<br>0.0025  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L                 |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1  |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium   | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20   | J                   | 0.010<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020  | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025<br>0.0050<br>0.010   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L                 |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1  |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND   |                     | 0.010<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020   | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025<br>0.0050<br>0.010<br>0.015  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L         |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1   |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063   |                     | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010   | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1  |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091  |                     | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010<br>0.010  | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1                                    |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063   |                     | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010   | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1  |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium<br>Zinc  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51  |                     | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010<br>0.010<br>0.010<br>0.0050   | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087<br>0.0025  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1                               |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51<br>(CVAA)<br>Result                            | J<br>Qualifier      | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.010<br>0.010<br>0.010<br>0.0050<br>0.020   | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087<br>0.0025<br>0.012<br>MDL  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | D        | 07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1                               |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium<br>Zinc<br>Method: 7470A - Mercury (   | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51<br>(CVAA)                                      | J<br>Qualifier      | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.010<br>0.010<br>0.010<br>0.0050<br>0.020   | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087<br>0.0025<br>0.012   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | <u>D</u> | 07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1                          |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium<br>Zinc<br>Method: 7470A - Mercury (<br>Analyte<br>Mercury<br>General Chemistry  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51<br>(CVAA)<br>Result<br>0.0012                  | J<br>Qualifier<br>J | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.010<br>0.010<br>0.010<br>0.0050<br>0.020<br><b>RL</b><br>0.0020                                    | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087<br>0.0025<br>0.012<br><b>MDL</b><br>0.0010                                     | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 08:03  | 07/05/19 12:11<br>07/05/19 12:11   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium<br>Zinc<br>Method: 7470A - Mercury (<br>Analyte<br>Mercury<br>General Chemistry<br>Analyte                                   | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51<br>(CVAA)<br><u>Result</u>                     | J<br>Qualifier      | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.010<br>0.010<br>0.010<br>0.0050<br>0.020<br><b>RL</b><br>0.0020                                    | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087<br>0.0025<br>0.012<br><b>MDL</b><br>0.0010                                     | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | <u>D</u> | 07/03/19 08:03<br>07/03/19 19:03<br>07/03/19 08:03                    | 07/05/19 12:11<br>07/05/19 12:11 | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1      |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium<br>Zinc<br>Method: 7470A - Mercury (<br>Analyte<br>Mercury<br>General Chemistry  | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51<br>(CVAA)<br>Result<br>0.0012<br>Result<br>120 | J<br>Qualifier<br>J | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.010<br>0.010<br>0.010<br>0.010<br>0.0050<br>0.020<br><b>RL</b><br>0.0020<br><b>RL</b><br>5.1       | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087<br>0.0025<br>0.012<br><b>MDL</b><br>0.0010<br><b>MDL</b>                       | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 13:01                                      | 07/05/19 12:11<br>07/05/19 12:11                   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium<br>Zinc<br>Method: 7470A - Mercury (<br>Analyte<br>Mercury<br>General Chemistry<br>Analyte<br>HEM<br>Total Kjeldahl Nitrogen | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51<br>(CVAA)<br><u>Result</u><br>120<br>470       | J<br>Qualifier<br>J | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010<br>0.010<br>0.010<br>0.0050<br>0.020<br><b>RL</b><br>0.0020<br><b>RL</b><br>5.1<br>10 | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0087<br>0.0025<br>0.012<br><b>MDL</b><br>1.4<br>5.0                                 | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 13:01                                      | 07/05/19 12:11<br>07/05/19 12:11                   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 |
| Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium<br>Zinc<br>Method: 7470A - Mercury (<br>Analyte<br>Mercury<br>General Chemistry<br>Analyte<br>HEM                            | 0.083<br>0.0085<br>0.090<br>0.018<br>0.0098<br>0.031<br>20<br>ND<br>0.0063<br>0.091<br>0.0083<br>0.51<br>(CVAA)<br>Result<br>0.0012<br>Result<br>120 | J<br>Qualifier<br>J | 0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.010<br>0.010<br>0.010<br>0.010<br>0.0050<br>0.020<br><b>RL</b><br>0.0020<br><b>RL</b><br>5.1       | 0.0089<br>0.0050<br>0.025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050<br>0.0050<br>0.0025<br>0.012<br><b>MDL</b><br>0.0010<br><b>MDL</b><br>1.4<br>5.0<br>0.31 | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |          | 07/03/19 08:03<br>07/03/19 13:01<br><b>Prepared</b><br>07/05/19 13:01 | 07/05/19 12:11<br>07/05/19 12:11                   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 |

## **Client Sample Results**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

### **Client Sample ID: BUTCHER** Date Collected: 06/26/19 06:06 Date Received: 07/02/19 10:10

| General Chemistry (Continued | •      |           |       |       |         |   |                |                |         |
|------------------------------|--------|-----------|-------|-------|---------|---|----------------|----------------|---------|
| Analyte                      | Result | Qualifier | RL    | MDL   | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Phenolics, Total Recoverable | 0.088  |           | 0.050 | 0.025 | mg/L    |   | 07/09/19 12:53 | 07/09/19 17:45 | 1       |
| Cyanide, Total               | ND     |           | 0.025 | 0.013 | mg/L    |   | 07/03/19 10:24 | 07/03/19 12:39 | 1       |
| Ammonia (as N)               | 28     |           | 13    | 2.5   | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Ammonia as NH3               | 34     |           | 15    | 3.0   | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Chemical Oxygen Demand       | 6000   |           | 400   | 200   | mg/L    |   |                | 07/10/19 16:46 | 20      |
| Analyte                      | Result | Qualifier | RL    | RL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Total Volatile Solids        | 2300   |           | 200   | 200   | mg/L    |   |                | 07/02/19 19:37 | 1       |
| Specific Gravity             | 0.99   |           | 0.010 | 0.010 | No Unit |   |                | 07/10/19 15:16 | 1       |
| Total Solids                 | 5000   |           | 200   | 200   | mg/L    |   |                | 07/02/19 19:36 | 1       |
| Nitrogen, Total              | 470    |           | 0.11  | 0.11  | mg/L    |   |                | 07/11/19 15:16 | 1       |

#### **Client Sample ID: OD STREAMS** Date Collected: 06/26/19 06:19 Date Received: 07/02/19 10:10

| Method: 8260B - Volatile O  | rganic Compour | nds (GC/M | S)       |     |      |   |          |                |         |
|-----------------------------|----------------|-----------|----------|-----|------|---|----------|----------------|---------|
| Analyte                     | Result Q       |           | RL       | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
| 1,2-Dichloropropane         | ND             |           | 10       | 1.3 | ug/L |   |          | 07/08/19 16:56 | 5       |
| Benzene                     | ND             |           | 10       | 1.3 | ug/L |   |          | 07/08/19 16:56 | 5       |
| Chloroform                  | ND             |           | 10       | 1.3 | ug/L |   |          | 07/08/19 16:56 | 5       |
| Ethylbenzene                | ND             |           | 10       | 1.3 | ug/L |   |          | 07/08/19 16:56 | 5       |
| m,p-Xylene                  | ND             |           | 10       | 2.5 | ug/L |   |          | 07/08/19 16:56 | 5       |
| Methylene Chloride          | ND             |           | 25       | 5.5 | ug/L |   |          | 07/08/19 16:56 | 5       |
| o-Xylene                    | ND             |           | 10       | 1.3 | ug/L |   |          | 07/08/19 16:56 | 5       |
| Toluene                     | ND             |           | 10       | 1.3 | ug/L |   |          | 07/08/19 16:56 | 5       |
| Xylenes, Total              | ND             |           | 10       | 1.3 | ug/L |   |          | 07/08/19 16:56 | 5       |
| Surrogate                   | %Recovery G    | Qualifier | Limits   |     |      |   | Prepared | Analyzed       | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 108            |           | 80 - 120 |     |      | - |          | 07/08/19 16:56 | 5       |

| 4-Bromofluorobenzene (Surr) | 108 | 80 - 120 |
|-----------------------------|-----|----------|
| Dibromofluoromethane (Surr) | 113 | 76 - 132 |
| Toluene-d8 (Surr)           | 100 | 80 - 128 |
|                             |     |          |

| Analyte                      | Result                                | Qualifier | RL       | MDL   | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------------------------|---------------------------------------|-----------|----------|-------|------|---|----------------|----------------|---------|
| Bis(2-ethylhexyl) phthalate  | ND                                    | Н         | 2000     | 400   | ug/L |   | 07/05/19 08:23 | 07/09/19 08:58 | 10      |
| Surrogate                    | %Recovery                             | Qualifier | Limits   |       |      |   | Prepared       | Analyzed       | Dil Fac |
| 2-Fluorobiphenyl             | 87                                    |           | 50 - 120 |       |      |   | 07/05/19 08:23 | 07/09/19 08:58 | 10      |
| 2-Fluorophenol               | 91                                    |           | 30 - 120 |       |      |   | 07/05/19 08:23 | 07/09/19 08:58 | 10      |
| 2,4,6-Tribromophenol         | 86                                    |           | 40 - 120 |       |      |   | 07/05/19 08:23 | 07/09/19 08:58 | 10      |
| Nitrobenzene-d5              | 93                                    |           | 45 - 120 |       |      |   | 07/05/19 08:23 | 07/09/19 08:58 | 10      |
| Terphenyl-d14                | 40                                    |           | 10 - 150 |       |      |   | 07/05/19 08:23 | 07/09/19 08:58 | 10      |
| Phenol-d6                    | 44                                    |           | 35 - 120 |       |      |   | 07/05/19 08:23 | 07/09/19 08:58 | 10      |
| _<br>Method: 8315A - Carbony | /I Compounds (I                       |           |          |       |      |   |                |                |         |
| Analyte                      |                                       | Qualifier | RL       | MDL   | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Formaldehyde                 | 0.11                                  | Н         | 0.050    | 0.025 | mg/L |   | 07/03/19 08:09 | 07/03/19 18:17 | 1       |
| _<br>Method: NO3NO2 Calc - I | Nitrogen, Nitrate                     | -Nitrite  |          |       |      |   |                |                |         |
| Analyte                      | · · · · · · · · · · · · · · · · · · · | Qualifier | RL       | MDL   | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Nitrate as N                 | ND                                    | Н         | 11       | 5.5   | mg/L |   |                | 07/09/19 16:07 | 1       |

Job ID: 440-245042-1

## Lab Sample ID: 440-245042-4 Matrix: Water

Lab Sample ID: 440-245042-5

Matrix: Water

5

Eurofins TestAmerica, Irvine

07/08/19 16:56

07/08/19 16:56

5

5

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

### Client Sample ID: OD STREAMS Date Collected: 06/26/19 06:19 Date Received: 07/02/19 10:10

| Method: NO3NO2 Calc - Nitroge<br>Analyte   |           | -Nitrite (Co<br>Qualifier | ntinued)<br><sub>RL</sub> | MDL    | Unit    | D  | Prepared       | Analyzed              | Dil Fac |
|--|-----------|---------------------------|---------------------------|--------|---------|----|----------------|-----------------------|---------|
| Nitrite as N   | ND        |                           | 15                        |        | mg/L    |    |                | 07/09/19 16:07        |         |
| Nitrate Nitrite as N   | ND        | н                         | 15                        |        | mg/L    |    |                | 07/09/19 16:07        | 1       |
| Method: 6010B - Metals (ICP) - T   | otal Reco | overable                  |                           |        |         |    |                |                       |         |
| Analyte  |           | Qualifier                 | RL                        | MDL    | Unit    | D  | Prepared       | Analyzed              | Dil Fac |
| Aluminum   | 740       |                           | 2.0                       | 1.0    | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 10      |
| Arsenic  | 1.3       |                           | 0.20                      | 0.18   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 10      |
| Barium   | 0.23      |                           | 0.20                      | 0.10   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 10      |
| Boron  | 1.2       |                           | 1.0                       | 0.50   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 1(      |
| Cadmium  | 0.37      |                           | 0.10                      | 0.050  | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 10      |
| Chromium   | 0.27      | В                         | 0.10                      | 0.050  | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 10      |
| Copper   | 0.86      |                           | 0.20                      | 0.10   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 1(      |
| Magnesium  | 330       |                           | 0.40                      | 0.20   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 10      |
| Manganese  | ND        |                           | 0.40                      | 0.30   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 10      |
| Nickel   | 0.14      | J                         | 0.20                      | 0.10   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 1       |
| Selenium   | 0.73      |                           | 0.20                      | 0.17   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 1       |
| Titanium   | 0.58      |                           | 0.10                      | 0.050  | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 1       |
| Zinc   | 43        |                           | 0.40                      | 0.24   | mg/L    |    | 07/08/19 09:56 | 07/08/19 18:35        | 1       |
| Method: 7470A - Mercury (CVAA<br>Analyte   |           | Qualifier                 | RL                        |        | Unit    | D  | Prepared       | Analyzed              | Dil Fa  |
| Mercury  | 0.0045    |                           | 0.0020                    | 0.0010 | mg/L    |    | 07/05/19 13:01 | 07/06/19 10:49        | 1       |
| General Chemistry  |           |                           |                           |        |         |    |                |                       |         |
| Analyte  | Result    | Qualifier                 | RL                        | MDL    | Unit    | D  | Prepared       | Analyzed              | Dil Fa  |
| HEM  | 8.8       |                           | 5.2                       | 1.5    | mg/L    |    | 07/08/19 06:52 | 07/08/19 13:23        |         |
| Total Kjeldahl Nitrogen  | 4200      |                           | 100                       | 50     | mg/L    |    | 07/05/19 14:00 | 07/10/19 17:40        | 1       |
| Nitrate Nitrite as N   | ND        |                           | 5.0                       | 0.31   | mg/L    |    |                | 07/10/19 11:35        | 10      |
| Phosphorus, Total  | 630       |                           | 100                       | 50     | mg/L    |    | 07/05/19 12:08 | 07/05/19 14:40        |         |
| Phenolics, Total Recoverable   | 3.3       |                           | 0.50                      | 0.25   | mg/L    |    | 07/09/19 12:53 | 07/10/19 05:44        | 1       |
| Cyanide, Total   | 0.021     | J                         | 0.025                     | 0.013  | mg/L    |    | 07/03/19 19:20 | 07/05/19 15:10        |         |
| Ammonia (as N)   | 2400      |                           | 250                       | 50     | mg/L    |    | 07/05/19 04:00 | 07/05/19 06:00        |         |
| Ammonia as NH3   | 2900      |                           | 300                       | 60     | mg/L    |    | 07/05/19 04:00 | 07/05/19 06:00        |         |
| Chemical Oxygen Demand   | 42000     |                           | 5000                      | 2500   | mg/L    |    |                | 07/10/19 16:46        | 25      |
| Analyte  | Result    | Qualifier                 | RL                        |        | Unit    | D  | Prepared       | Analyzed              | Dil Fa  |
| Total Volatile Solids  | 17000     |                           | 500                       |        | mg/L    |    |                | 07/02/19 19:37        |         |
| Specific Gravity   | 1.0       |                           | 0.010                     | 0.010  | No Unit |    |                | 07/10/19 15:15        |         |
| Total Solids   | 33000     |                           | 500                       | 500    | mg/L    |    |                | 07/02/19 19:36        |         |
| Nitrogen, Total  | 4200      |                           | 0.11                      | 0.11   | mg/L    |    |                | 07/11/19 15:16        |         |
| Client Sample ID: BUTCHER<br>ate Collected: 06/27/19 06:09<br>ate Received: 07/02/19 10:10 | R         |                           |                           |        |         | La | ab Sample      | ID: 440-245<br>Matrix |         |

#### Method: 8260B - Volatile Organic Compounds (GC/MS) Analyte Result Qualifier RL MDL Unit D Analyzed Dil Fac Prepared ND 2.0 1,2-Dichloropropane 0.25 ug/L 07/09/19 09:58 1 Benzene 1.1 J 2.0 0.25 ug/L 07/09/19 09:58 1 Chloroform ND 2.0 0.25 ug/L 07/09/19 09:58 1 0.25 ug/L Ethylbenzene 2.0 2.0 07/09/19 09:58 1

Eurofins TestAmerica, Irvine

7/31/2019 (Rev. 1)

Job ID: 440-245042-1

## Lab Sample ID: 440-245042-5 Matrix: Water

/ater

## Client Sample ID: BUTCHER Date Collected: 06/27/19 06:09 Date Received: 07/02/19 10:10

# Lab Sample ID: 440-245042-6

Matrix: Water

5

| Analyte   | Result   | Qualifier              | RL  | MDL   | Unit   | D        | Prepared   | Analyzed   | Dil Fac       |
|---|--|------------------------|---|---|--|----------|--|--|---------------|
| n,p-Xylene  | ND   |                        | 2.0   | 0.50  | ug/L   |          |  | 07/09/19 09:58   | 1             |
| lethylene Chloride  | ND   |                        | 5.0   | 1.1   | ug/L   |          |  | 07/09/19 09:58   | 1             |
| o-Xylene  | ND   |                        | 2.0   | 0.25  | ug/L   |          |  | 07/09/19 09:58   | 1             |
| <b>Foluene</b>  | 0.40   | J                      | 2.0   | 0.25  | ug/L   |          |  | 07/09/19 09:58   | 1             |
| (ylenes, Total  | ND   |                        | 2.0   | 0.25  | ug/L   |          |  | 07/09/19 09:58   | 1             |
| Surrogate   | %Recovery  | Qualifier              | Limits  |   |  |          | Prepared   | Analyzed   | Dil Fac       |
| -Bromofluorobenzene (Surr)  | 124  | X *                    | 80 - 120  |   |  |          |  | 07/09/19 09:58   | 1             |
| Dibromofluoromethane (Surr)   | 110  |                        | 76 - 132  |   |  |          |  | 07/09/19 09:58   | 1             |
| oluene-d8 (Surr)  | 107  |                        | 80 - 128  |   |  |          |  | 07/09/19 09:58   | 1             |
| Aethod: 625 - Semivolatile  | Organic Com  | oounds (G              | C/MS)   |   |  |          |  |  |               |
| Analyte   |  | Qualifier              | Í RL  | MDL   | Unit   | D        | Prepared   | Analyzed   | Dil Fac       |
| Bis(2-ethylhexyl) phthalate   | ND   | Н                      | 200   | 40  | ug/L   |          | 07/05/19 08:23   | 07/09/19 09:22   | 2             |
| Surrogate   | %Recovery  | Qualifier              | Limits  |   |  |          | Prepared   | Analyzed   | Dil Fac       |
| -Fluorobiphenyl   | 83   |                        | 50 - 120  |   |  |          | 07/05/19 08:23   | 07/09/19 09:22   |               |
| -Fluorophenol   | 77   |                        | 30 - 120  |   |  |          | 07/05/19 08:23   | 07/09/19 09:22   | 2             |
| ,4,6-Tribromophenol   | 49   |                        | 40 - 120  |   |  |          | 07/05/19 08:23   | 07/09/19 09:22   | 2             |
| litrobenzene-d5   | 84   |                        | 45 - 120  |   |  |          | 07/05/19 08:23   | 07/09/19 09:22   |               |
| erphenyl-d14  | 55   |                        | 10 - 150  |   |  |          | 07/05/19 08:23   | 07/09/19 09:22   | :             |
| Phenol-d6   | 82   |                        | 35 - 120  |   |  |          | 07/05/19 08:23   | 07/09/19 09:22   | 2             |
| Method: 8315A - Carbonyl (<br>Analyte   | Result   | Qualifier              | RL  | MDL   |  | D        | Prepared   | Analyzed   | Dil Fac       |
| Formaldehyde  | 0.13   | H                      | 0.050   | 0.025   | mg/L   |          | 07/03/19 08:09   | 07/03/19 18:38   |               |
| Method: NO3NO2 Calc - Nit   | rogen, Nitrate   | -Nitrite               |   |   |  |          |  |  |               |
| Analyte   |  | Qualifier              | ы   | мы  | Unit   | D        | Prepared   | Analyzed   | Dil Fac       |
| 11 GI Y LO  | Result   | Quaimer                | RL  |   |  |          |  |  |               |
|   | ND   |                        |   |   | mg/L   |          |  | 07/09/19 16:07   |               |
| litrate as N  |  | H                      |   | 1.1   | mg/L<br>mg/L   |          |  | 07/09/19 16:07<br>07/09/19 16:07   | 1             |
| Nitrate as N<br>Nitrite as N  | ND   | H<br>H                 | 2.2   | 1.1<br>0.50   | 0  |          |  |  |               |
| Jitrate as N<br>Jitrite as N<br>Jitrate Nitrite as N  | ND<br>ND<br>ND   | H<br>H<br>H            | 2.2<br>3.0  | 1.1<br>0.50   | mg/L   |          |  | 07/09/19 16:07   |               |
| litrate as N<br>litrite as N<br>litrate Nitrite as N<br><b>flethod: 6010B - Metals (IC</b>  | ND<br>ND<br>ND<br>P) - Total Reco  | H<br>H<br>H            | 2.2<br>3.0  | 1.1<br>0.50<br>1.1<br><b>MDL</b>  | mg/L<br>mg/L<br>Unit   | <br>D    | Prepared   | 07/09/19 16:07   |               |
| litrate as N<br>litrite as N<br>litrate Nitrite as N<br><b>/lethod: 6010B - Metals (IC</b><br>Inalyte   | ND<br>ND<br>ND<br>P) - Total Reco  | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0   | 1.1<br>0.50<br>1.1  | mg/L<br>mg/L<br>Unit   | D        | Prepared<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07   | Dil Fa        |
| litrate as N<br>litrate as N<br>litrate Nitrite as N<br><b>Aethod: 6010B - Metals (IC</b><br>Nalyte<br>Numinum  | ND<br>ND<br>ND<br>P) - Total Reco<br>Result  | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0<br><b>RL</b>  | 1.1<br>0.50<br>1.1<br><b>MDL</b>  | mg/L<br>mg/L<br>Unit<br>mg/L                                 | D        | 07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br>Analyzed   | Dil Fa        |
| litrate as N<br>litrite as N<br>litrate Nitrite as N<br><b>Aethod: 6010B - Metals (IC</b><br>nalyte<br>Numinum<br>Arsenic   | P) - Total Reco<br>Result<br>0.30  | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0<br><b>RL</b><br>0.10  | 1.1<br>0.50<br>1.1<br><b>MDL</b><br>0.050<br>0.0089<br>0.0050   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L                         | D        | 07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br><b>Analyzed</b><br>07/05/19 12:14  | Dil Fa        |
| litrate as N<br>litrite as N<br>litrate Nitrite as N<br><b>Aethod: 6010B - Metals (IC</b><br>Malyte<br>Numinum<br>Arsenic<br>Barium   | P) - Total Reco<br>Result<br>0.30<br>0.086   | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0<br><b>RL</b><br>0.10<br>0.010   | 1.1<br>0.50<br>1.1<br><b>MDL</b><br>0.050<br>0.0089   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L                         | D        | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br>Analyzed<br>07/05/19 12:14<br>07/05/19 12:14   | Dil Fa        |
| litrate as N<br>litrite as N<br>litrite as N<br><b>Aethod: 6010B - Metals (IC</b><br>Inalyte<br>Numinum<br>Arsenic<br>Barium<br>Boron   | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016  | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0<br>.0<br>.0<br>0.10<br>0.010<br>0.010   | 1.1<br>0.50<br>1.1<br><b>MDL</b><br>0.050<br>0.0089<br>0.0050   | mg/L<br>mg/L<br>Mg/L<br>mg/L<br>mg/L<br>mg/L                 | D        | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br><b>Analyzed</b><br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14  | Dil Fa        |
| iitrate as N<br>litrite as N<br>litrate Nitrite as N<br><b>lethod: 6010B - Metals (IC</b><br>nalyte<br>Juminum<br>vrsenic<br>Barium<br>Boron<br>Cadmium   | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016<br>0.14  | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0<br><b>RL</b><br>0.10<br>0.010<br>0.010<br>0.050   | 1.1<br>0.50<br>1.1<br><b>MDL</b><br>0.050<br>0.0089<br>0.0050<br>0.025  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L         | D        | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br><b>Analyzed</b><br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14  | Dil Fa        |
| litrate as N<br>litrite as N<br>litrite as N<br><b>fethod: 6010B - Metals (IC</b><br>nalyte<br>luminum<br>trsenic<br>Barium<br>Boron<br>cadmium<br>chromium   | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016<br>0.14<br>0.022   | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0<br><b>RL</b><br>0.10<br>0.010<br>0.010<br>0.050<br>0.0050   | 1.1<br>0.50<br>1.1<br><b>MDL</b><br>0.050<br>0.0089<br>0.0050<br>0.025<br>0.025   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | D        | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br><b>Analyzed</b><br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14  | Dil Fa        |
| litrate as N<br>litrite as N<br>litrite as N<br><b>Aethod: 6010B - Metals (ICI</b><br>nalyte<br>Suminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium  | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016<br>0.14<br>0.022<br>0.020                                  | н<br>н<br>н<br>verable | 2.2<br>3.0<br>3.0<br>0.10<br>0.010<br>0.010<br>0.050<br>0.0050<br>0.0050  | 1.1<br>0.50<br>1.1<br>0.050<br>0.0089<br>0.0050<br>0.0025<br>0.0025<br>0.0025   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | D        | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br><b>Analyzed</b><br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14  | Dil Fa        |
| litrate as N<br>litrate as N<br>litrate Nitrite as N<br><b>Aethod: 6010B - Metals (IC</b><br>Nalyte<br>Numinum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium  | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016<br>0.14<br>0.022<br>0.020<br>0.042                         | H<br>H<br>Qualifier    | 2.2<br>3.0<br>3.0<br>0.10<br>0.010<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010   | 1.1<br>0.50<br>1.1<br>0.050<br>0.0050<br>0.0050<br>0.0055<br>0.0025<br>0.0025<br>0.0050   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | D        | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br><b>Analyzed</b><br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14                                    | Dil Fa        |
| litrate as N<br>litrate as N<br>litrate Nitrite as N<br><b>Aethod: 6010B - Metals (IC</b><br>Nalyte<br>Numinum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese                               | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016<br>0.14<br>0.022<br>0.020<br>0.042<br>29<br>0.016          | H<br>H<br>Qualifier    | 2.2<br>3.0<br>3.0<br><b>RL</b><br>0.10<br>0.010<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020                             | 1.1<br>0.50<br>1.1<br>0.050<br>0.0089<br>0.0050<br>0.0025<br>0.0025<br>0.0025<br>0.0050<br>0.010                                  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | <u>D</u> | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br><b>Analyzed</b><br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14                  | <u>Dil Fa</u> |
| litrate as N<br>litrate as N<br>litrate Nitrite as N<br>Aethod: 6010B - Metals (IC<br>Nalyte<br>Numinum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>lickel                | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016<br>0.14<br>0.022<br>0.020<br>0.042<br>29<br>0.016<br>0.015 | H<br>H<br>Qualifier    | 2.2<br>3.0<br>3.0<br><b>RL</b><br>0.10<br>0.010<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020          | 1.1<br>0.50<br>1.1<br><b>MDL</b><br>0.050<br>0.0089<br>0.0050<br>0.0025<br>0.0025<br>0.0025<br>0.0050<br>0.010<br>0.015<br>0.0050 | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | <u>D</u> | 07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03<br>07/03/19 08:03   | 07/09/19 16:07<br>07/09/19 16:07<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14 | <u>Dil Fa</u> |
| Nitrate as N<br>Nitrate as N<br>Nitrate Nitrite as N<br>Method: 6010B - Metals (ICI<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium | P) - Total Reco<br>Result<br>0.30<br>0.086<br>0.016<br>0.14<br>0.022<br>0.020<br>0.042<br>29<br>0.016          | H<br>H<br>Qualifier    | 2.2<br>3.0<br>3.0<br><b>RL</b><br>0.10<br>0.010<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010 | 1.1<br>0.50<br>1.1<br>0.050<br>0.0089<br>0.0050<br>0.0025<br>0.0025<br>0.0025<br>0.0050<br>0.010<br>0.015                         | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | D        | 07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03           07/03/19         08:03 | 07/09/19 16:07<br>07/09/19 16:07<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14<br>07/05/19 12:14 |               |

## **Client Sample Results**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

### **Client Sample ID: BUTCHER** Date Collected: 06/27/19 06:09 Date Received: 07/02/19 10:10

Method: 7470A - Mercury

Analyte

Mercury

| )          |           |        |        |      |   |                |                |  |
|------------|-----------|--------|--------|------|---|----------------|----------------|--|
| <br>Result | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       |  |
| <br>0.0013 | J         | 0.0020 | 0.0010 | mg/L |   | 07/05/19 13:01 | 07/06/19 10:52 |  |

| General Chemistry            |        |           |       |       |         |   |                |                |         |
|------------------------------|--------|-----------|-------|-------|---------|---|----------------|----------------|---------|
| Analyte                      | Result | Qualifier | RL    | MDL   | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| HEM                          | 138    |           | 5.4   | 1.5   | mg/L    |   | 07/08/19 06:52 | 07/08/19 13:23 | 1       |
| Total Kjeldahl Nitrogen      | 450    |           | 10    | 5.0   | mg/L    |   | 07/05/19 14:00 | 07/09/19 21:47 | 1       |
| Nitrate Nitrite as N         | ND     |           | 5.0   | 0.31  | mg/L    |   |                | 07/10/19 11:39 | 100     |
| Phosphorus, Total            | 50     |           | 25    | 13    | mg/L    |   | 07/05/19 18:05 | 07/06/19 13:33 | 1       |
| Phenolics, Total Recoverable | 0.083  |           | 0.050 | 0.025 | mg/L    |   | 07/09/19 12:53 | 07/09/19 17:45 | 1       |
| Cyanide, Total               | ND     |           | 0.025 | 0.013 | mg/L    |   | 07/03/19 19:20 | 07/05/19 15:10 | 1       |
| Ammonia (as N)               | 35     |           | 13    | 2.5   | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Ammonia as NH3               | 43     |           | 15    | 3.0   | mg/L    |   | 07/05/19 04:00 | 07/05/19 06:00 | 1       |
| Chemical Oxygen Demand       | 5500   |           | 400   | 200   | mg/L    |   |                | 07/10/19 16:47 | 20      |
| Analyte                      | Result | Qualifier | RL    | RL    | Unit    | D | Prepared       | Analyzed       | Dil Fac |
| Total Volatile Solids        | 6900   |           | 200   | 200   | mg/L    |   |                | 07/02/19 19:37 | 1       |
| Specific Gravity             | 0.97   |           | 0.010 | 0.010 | No Unit |   |                | 07/10/19 15:13 | 1       |
| Total Solids                 | 12000  |           | 200   | 200   | mg/L    |   |                | 07/02/19 19:36 | 1       |
| Nitrogen, Total              | 450    |           | 0.11  | 0.11  | mg/L    |   |                | 07/11/19 15:16 | 1       |

#### **Client Sample ID: OD STREAMS** Date Collected: 06/27/19 06:22

## Lab Sample ID: 440-245042-7

Matrix: Water

Date Received: 07/02/19 10:10

| Method: 8260B - Volatile O  | -         | •         |          |     |      | _ | <b>_</b> . |                |         |
|-----------------------------|-----------|-----------|----------|-----|------|---|------------|----------------|---------|
| Analyte                     | Result    | Qualifier | RL       | MDL | Unit | D | Prepared   | Analyzed       | Dil Fac |
| 1,2-Dichloropropane         | ND        |           | 10       | 1.3 | ug/L |   |            | 07/08/19 17:56 | 5       |
| Benzene                     | ND        |           | 10       | 1.3 | ug/L |   |            | 07/08/19 17:56 | 5       |
| Chloroform                  | ND        |           | 10       | 1.3 | ug/L |   |            | 07/08/19 17:56 | 5       |
| Ethylbenzene                | ND        |           | 10       | 1.3 | ug/L |   |            | 07/08/19 17:56 | 5       |
| m,p-Xylene                  | ND        |           | 10       | 2.5 | ug/L |   |            | 07/08/19 17:56 | 5       |
| Methylene Chloride          | ND        |           | 25       | 5.5 | ug/L |   |            | 07/08/19 17:56 | 5       |
| o-Xylene                    | ND        |           | 10       | 1.3 | ug/L |   |            | 07/08/19 17:56 | 5       |
| Toluene                     | ND        |           | 10       | 1.3 | ug/L |   |            | 07/08/19 17:56 | 5       |
| Xylenes, Total              | ND        |           | 10       | 1.3 | ug/L |   |            | 07/08/19 17:56 | 5       |
| Surrogate                   | %Recovery | Qualifier | Limits   |     |      |   | Prepared   | Analyzed       | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 101       |           | 80 - 120 |     |      | - |            | 07/08/19 17:56 | 5       |
| Dibromofluoromethane (Surr) | 107       |           | 76 - 132 |     |      |   |            | 07/08/19 17:56 | 5       |
| Toluene-d8 (Surr)           | 101       |           | 80 - 128 |     |      |   |            | 07/08/19 17:56 | 5       |

## Method: 625 - Semivolatile Organic Compounds (GC/MS)

| Analyte                     | Result    | Qualifier | RL       | MDL | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Bis(2-ethylhexyl) phthalate | ND        | Н         | 2000     | 400 | ug/L |   | 07/05/19 08:23 | 07/09/19 09:47 | 10      |
| Surrogate                   | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 2-Fluorobiphenyl            | 90        |           | 50 - 120 |     |      |   | 07/05/19 08:23 | 07/09/19 09:47 | 10      |
| 2-Fluorophenol              | 86        |           | 30 - 120 |     |      |   | 07/05/19 08:23 | 07/09/19 09:47 | 10      |
| 2,4,6-Tribromophenol        | 92        |           | 40 - 120 |     |      |   | 07/05/19 08:23 | 07/09/19 09:47 | 10      |
| Nitrobenzene-d5             | 86        |           | 45 - 120 |     |      |   | 07/05/19 08:23 | 07/09/19 09:47 | 10      |
| Terphenyl-d14               | 74        |           | 10 - 150 |     |      |   | 07/05/19 08:23 | 07/09/19 09:47 | 10      |
| Phenol-d6                   | 48        |           | 35 - 120 |     |      |   | 07/05/19 08:23 | 07/09/19 09:47 | 10      |

Eurofins TestAmerica, Irvine

Matrix: Water

Dil Fac

10

5

Lab Sample ID: 440-245042-6

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

**Client Sample ID: OD STREAMS** 

Date Collected: 06/27/19 06:22

Date Received: 07/02/19 10:10

**Specific Gravity** 

Nitrogen, Total

**Total Solids** 

# Lab Sample ID: 440-245042

Matrix: Wa

| 2-7<br>ater |     |
|-------------|-----|
|             |     |
| Fac         | 5   |
| 1           |     |
| Fac<br>1    |     |
| 1<br>1      | 8   |
| _           | 9   |
| Fac         |     |
| 10          |     |
| 10          |     |
| 10          |     |
| 10          |     |
| 10          |     |
| 10          |     |
| 10          | 4.0 |
| 10          | 13  |
| 10          |     |
| 10          |     |
| 10          |     |
| 10          |     |
| 10          |     |
|             |     |

1

1

1

| Method: 8315A - Carbonyl Cor<br>Analyte |              | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---|--------------|-----------|--------|--------|------|---|----------------|----------------|---------|
| Formaldehyde                            | 0.15         | н         | 0.050  | 0.025  | mg/L |   | 07/03/19 08:09 | 07/03/19 18:59 | 1       |
| Method: NO3NO2 Calc - Nitrog            | gen, Nitrate | -Nitrite  |        |        |      |   |                |                |         |
| Analyte                                 | Result       | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Nitrate as N                            | ND           | Н         | 11     | 5.5    | mg/L |   |                | 07/09/19 16:07 |         |
| Nitrite as N                            | ND           | Н         | 15     | 2.5    | mg/L |   |                | 07/09/19 16:07 |         |
| Nitrate Nitrite as N                    | ND           | Н         | 15     | 5.5    | mg/L |   |                | 07/09/19 16:07 |         |
| Method: 6010B - Metals (ICP)            | - Total Reco | overable  |        |        |      |   |                |                |         |
| Analyte                                 |              | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Aluminum                                | 160          |           | 1.0    | 0.50   | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 10      |
| Arsenic                                 | 0.32         |           | 0.10   | 0.089  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 1(      |
| Barium                                  | 0.055        | J         | 0.10   | 0.050  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 10      |
| Boron                                   | 0.57         |           | 0.50   | 0.25   | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 1(      |
| Cadmium                                 | 0.081        |           | 0.050  | 0.025  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 1(      |
| Chromium                                | 0.083        | В         | 0.050  | 0.025  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 10      |
| Copper                                  | 0.21         |           | 0.10   | 0.050  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 1(      |
| Magnesium                               | 97           |           | 0.20   | 0.10   | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 10      |
| Manganese                               | ND           |           | 0.20   | 0.15   | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 10      |
| Nickel                                  | ND           |           | 0.10   | 0.050  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 1(      |
| Selenium                                | 0.20         |           | 0.10   | 0.087  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 1(      |
| Titanium                                | 0.15         |           | 0.050  | 0.025  | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 10      |
| Zinc                                    | 10           |           | 0.20   | 0.12   | mg/L |   | 07/08/19 09:56 | 07/08/19 18:38 | 1(      |
| Method: 7470A - Mercury (CV/            | AA)          |           |        |        |      |   |                |                |         |
| Analyte                                 |              | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Mercury                                 | 0.0036       |           | 0.0020 | 0.0010 | mg/L |   | 07/05/19 13:01 | 07/06/19 10:54 | 10      |
| General Chemistry                       |              |           |        |        |      |   |                |                |         |
| Analyte                                 | Result       | Qualifier | RL     |        | Unit | D | Prepared       | Analyzed       | Dil Fa  |
| HEM                                     | 52.0         |           | 5.3    | 1.5    | mg/L |   | 07/08/19 06:52 | 07/08/19 13:23 |         |
| Total Kjeldahl Nitrogen                 | 4200         |           | 100    | 50     | mg/L |   | 07/05/19 14:00 | 07/10/19 17:40 | 10      |
| Nitrate Nitrite as N                    | ND           |           | 5.0    | 0.31   | mg/L |   |                | 07/10/19 11:49 | 100     |
| Phosphorus, Total                       | 690          |           | 100    | 50     | mg/L |   | 07/05/19 12:08 | 07/05/19 14:40 |         |
| Phenolics, Total Recoverable            | 7.5          |           | 1.0    | 0.50   | mg/L |   | 07/09/19 12:53 | 07/10/19 06:10 | 20      |
| Cyanide, Total                          | 0.032        |           | 0.025  | 0.013  | mg/L |   | 07/03/19 19:20 | 07/05/19 15:10 |         |
| Ammonia (as N)                          | 2400         |           | 250    | 50     | mg/L |   | 07/05/19 04:00 | 07/05/19 06:00 |         |
| Ammonia as NH3                          | 3000         |           | 300    | 60     | mg/L |   | 07/05/19 04:00 | 07/05/19 06:00 |         |
| Chemical Oxygen Demand                  | 43000        |           | 5000   | 2500   | mg/L |   |                | 07/10/19 16:47 | 250     |
| Analyte                                 | Result       | Qualifier | RL     |        | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Total Volatile Solids                   | 15000        |           | 500    | 500    | mg/L |   |                | 07/02/19 19:37 | 1       |

07/10/19 15:12

07/02/19 19:36

07/11/19 15:16

0.010

200

0.11

1.0

13000

4200

0.010 No Unit

200 mg/L

0.11 mg/L

## Method Summary

#### Client: Geosyntec Consultants, Inc. Project/Site: Ocea n Die

Method 8260B 625

8315A NO3NO2 Calc 6010B

7470A 1664A 2540E 351.2 353.2 365.3 420.1

ASTM D5057-90 SM 2540B SM 4500 CN E SM 4500 NH3 D SM 5220D **Total Nitrogen** Subcontract 1664A 3005A 351.2

365.2/365.3/365

5030B 625 7470A 8315\_W\_Prep Distill/CN Distill/Phenol SM 4500 NH3 B

| Method Description                                 | Protocol  | Laboratory     |
|--|-----------|----------------|
| Volatile Organic Compounds (GC/MS)                 | SW846     | TAL IRV        |
| Semivolatile Organic Compounds (GC/MS)             | 40CFR136A | TAL IRV        |
| Carbonyl Compounds (HPLC)                          | SW846     | TAL IRV        |
| Nitrogen, Nitrate-Nitrite                          | EPA       | TAL IRV        |
| Metals (ICP)                                       | SW846     | TAL IRV        |
| Mercury (CVAA)                                     | SW846     | TAL IRV        |
| HEM and SGT-HEM                                    | 1664A     | TAL IRV        |
| Solids, Volatile and Fixed (VS)                    | SM        | TAL IRV        |
| Nitrogen, Total Kjeldahl                           | MCAWW     | TAL IRV        |
| Nitrogen, Nitrate-Nitrite                          | MCAWW     | TAL SAC        |
| Phosphorus, Total                                  | EPA       | TAL IRV        |
| Phenolics, Total Recoverable                       | MCAWW     | TAL SAV        |
| Specific Gravity and Bulk Density (Screening)      | ASTM      | TAL PIT        |
| Solids, Total                                      | SM        | TAL IRV        |
| Cyanide, Total                                     | SM        | TAL IRV        |
| Ammonia  | SM        | TAL IRV        |
| COD  | SM        | TAL IRV        |
| Nitrogen, Total                                    | EPA       | TAL IRV        |
| Pyrethrins   | None      | Physis Env     |
| HEM and SGT-HEM (Aqueous)                          | 1664A     | TAL IRV        |
| Preparation, Total Recoverable or Dissolved Metals | SW846     | TAL IRV        |
| Nitrogen, Total Kjeldahl                           | MCAWW     | TAL IRV        |
| Phosphorus, Total                                  | MCAWW     | TAL IRV        |
| Purge and Trap                                     | SW846     | TAL IRV        |
| Liquid-Liquid Extraction                           | 40CFR136A | TAL IRV        |
| Preparation, Mercury                               | SW846     | TAL IRV        |
| Liquid-Liquid Extraction (Carbonyl Compounds)      | SW846     | TAL IRV        |
| Distillation, Cyanide                              | None      | TAL IRV        |
| Distillation, Phenolics                            | None      | TAL SAV        |
|  | 014       | <b>TAL (D)</b> |

#### **Protocol References:**

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

ASTM = ASTM International

EPA = US Environmental Protection Agency

Distillation, Ammonia

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

Physis Env = Physis Environmental Laboratories, 1904 Wright Circle, Anaheim, CA 92806

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TAL IRV

SM

## Client Sample ID: 06 25 BUTCH Date Collected: 06/25/19 08:15 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-1 Matrix: Water

| Ргер Туре         | Batch<br>Type | Batch<br>Method | Run        | Dil<br>Factor | Initial<br>Amount | Final<br>Amount | Batch<br>Number | Prepared<br>or Analyzed | Analyst | Lab     |
|-------------------|---------------|-----------------|------------|---------------|-------------------|-----------------|-----------------|-------------------------|---------|---------|
| Total/NA          | Analysis      | - 8260B         | - <u> </u> | 1             | 10 mL             | 10 mL           | 556543          | 07/09/19 05:59          | -       | TAL IRV |
| Total/NA          | Prep          | 625             |            |               | 100 mL            | 2.0 mL          | 556176          | 07/05/19 08:23          | JAA     | TAL IRV |
| Total/NA          | Analysis      | 625             |            | 2             |                   |                 | 556467          | 07/09/19 07:20          | L1B     | TAL IRV |
| Total/NA          | Prep          | 8315_W_Prep     |            |               | 20 mL             | 1 mL            | 555931          | 07/03/19 08:09          | FTD     | TAL IRV |
| Total/NA          | Analysis      | 8315A           |            | 1             |                   |                 | 556054          | 07/03/19 16:53          | D1D     | TAL IRV |
| Total/NA          | Analysis      | NO3NO2 Calc     |            | 1             |                   |                 | 556718          | 07/09/19 16:07          | NN      | TAL IRV |
| Total Recoverable | Prep          | 3005A           |            |               | 25 mL             | 25 mL           | 555968          | 07/03/19 08:03          | BV      | TAL IRV |
| Total Recoverable | Analysis      | 6010B           |            | 1             |                   |                 | 556263          | 07/05/19 12:09          | P1R     | TAL IRV |
| Total/NA          | Prep          | 7470A           |            |               | 20 mL             | 20 mL           | 556247          | 07/05/19 13:01          | EMS     | TAL IRV |
| Total/NA          | Analysis      | 7470A           |            | 10            |                   |                 | 556352          | 07/06/19 10:40          | EMS     | TAL IRV |
| Total/NA          | Prep          | 1664A           |            |               | 930 mL            | 1000 mL         | 556396          | 07/08/19 06:52          |         | TAL IRV |
| Total/NA          | Analysis      | 1664A           |            | 1             |                   |                 | 556472          | 07/08/19 13:23          | JC1     | TAL IRV |
| Total/NA          | Analysis      | 2540E           |            | 1             | 5 mL              | 100 mL          | 555904          | 07/02/19 19:36          | HTL     | TAL IRV |
| Total/NA          | Prep          | 351.2           |            |               | 0.5 mL            | 25 mL           | 556300          | 07/05/19 14:00          |         | TAL IRV |
| Total/NA          | Analysis      | 351.2           |            | 5             |                   |                 | 556894          | 07/09/19 21:47          | HTL     | TAL IRV |
| Total/NA          | Analysis      | 353.2           |            | 100           |                   |                 | 306826          | 07/10/19 11:13          | TCS     | TAL SAC |
| Total/NA          | Prep          | 365.2/365.3/365 |            |               | 0.100 mL          | 50 mL           | 556299          | 07/05/19 18:05          | MMP     | TAL IRV |
| Total/NA          | Analysis      | 365.3           |            | 1             |                   |                 | 556353          | 07/06/19 13:33          | MMP     | TAL IRV |
| Total/NA          | Prep          | Distill/Phenol  |            |               | 6 mL              | 6 mL            | 577256          | 07/09/19 12:53          |         | TAL SAV |
| Total/NA          | Analysis      | 420.1           |            | 1             | 6 mL              | 6 mL            | 577344          | 07/09/19 17:37          | NVF     | TAL SAV |
| Total/NA          | Analysis      | ASTM D5057-90   |            | 1             | 50 g              | 50 mL           | 284432          | 07/10/19 15:21          | TAM     | TAL PIT |
| Total/NA          | Analysis      | SM 2540B        |            | 1             | 5 mL              | 100 mL          | 555974          | 07/02/19 19:36          | XL      | TAL IRV |
| Total/NA          | Prep          | Distill/CN      |            |               | 50 mL             | 50 mL           | 556015          | 07/03/19 10:24          | KMY     | TAL IRV |
| Total/NA          | Analysis      | SM 4500 CN E    |            | 1             |                   |                 | 556040          | 07/03/19 12:39          | KMY     | TAL IRV |
| Total/NA          | Prep          | SM 4500 NH3 B   |            |               | 1.0 mL            | 50 mL           | 556152          | 07/05/19 04:00          |         | TAL IRV |
| Total/NA          | Analysis      | SM 4500 NH3 D   |            | 1             |                   |                 | 556165          | 07/05/19 06:00          | ΥZ      | TAL IRV |
| Total/NA          | Analysis      | SM 5220D        |            | 20            | 2 mL              | 2 mL            | 556931          | 07/10/19 16:46          | KYP     | TAL IRV |
| Total/NA          | Analysis      | Total Nitrogen  |            | 1             |                   |                 | 557104          | 07/11/19 15:16          | TLN     | TAL IRV |

#### Client Sample ID: 06 25 OD STREAMS Date Collected: 06/25/19 08:24 Date Received: 07/02/19 10:10

| Ргер Туре         | Batch<br>Type | Batch<br>Method | Run | Dil<br>Factor | Initial<br>Amount | Final<br>Amount | Batch<br>Number | Prepared or Analyzed | Analyst | Lab     |
|-------------------|---------------|-----------------|-----|---------------|-------------------|-----------------|-----------------|----------------------|---------|---------|
| Total/NA          | Analysis      | 8260B           |     | 5             | 10 mL             | 10 mL           | 556388          | 07/08/19 17:00       | TCN     | TAL IRV |
| Total/NA          | Prep          | 625             |     |               | 100 mL            | 2.0 mL          | 556176          | 07/05/19 08:23       | JAA     | TAL IRV |
| Total/NA          | Analysis      | 625             |     | 10            |                   |                 | 556467          | 07/09/19 07:44       | L1B     | TAL IRV |
| Total/NA          | Prep          | 8315_W_Prep     |     |               | 20 mL             | 1 mL            | 555931          | 07/03/19 08:09       | FTD     | TAL IRV |
| Total/NA          | Analysis      | 8315A           |     | 1             |                   |                 | 556054          | 07/03/19 17:14       | D1D     | TAL IRV |
| Total/NA          | Analysis      | NO3NO2 Calc     |     | 1             |                   |                 | 556718          | 07/09/19 16:07       | NN      | TAL IRV |
| Total Recoverable | Prep          | 3005A           |     |               | 25 mL             | 25 mL           | 556431          | 07/08/19 09:56       | BV      | TAL IRV |
| Total Recoverable | Analysis      | 6010B           |     | 10            |                   |                 | 556566          | 07/08/19 18:23       | P1R     | TAL IRV |

Eurofins TestAmerica, Irvine

Lab Sample ID: 440-245042-2

Matrix: Water

#### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

#### Client Sample ID: 06 25 OD STREAMS Date Collected: 06/25/19 08:24 Date Received: 07/02/19 10:10

5

7

13

## Lab Sample ID: 440-245042-2 Matrix: Water

|           | Batch    | Batch           |     | Dil    | Initial  | Final   | Batch  | Prepared       |         |         |
|-----------|----------|-----------------|-----|--------|----------|---------|--------|----------------|---------|---------|
| Prep Type | Туре     | Method          | Run | Factor | Amount   | Amount  | Number | or Analyzed    | Analyst | Lab     |
| Total/NA  | Prep     | 7470A           |     |        | 20 mL    | 20 mL   | 556247 | 07/05/19 13:01 | EMS     | TAL IRV |
| Total/NA  | Analysis | 7470A           |     | 10     |          |         | 556352 | 07/06/19 10:43 | EMS     | TAL IRV |
| Total/NA  | Prep     | 1664A           |     |        | 945 mL   | 1000 mL | 556396 | 07/08/19 06:52 | JC1     | TAL IRV |
| Total/NA  | Analysis | 1664A           |     | 1      |          |         | 556472 | 07/08/19 13:23 | JC1     | TAL IRV |
| Total/NA  | Analysis | 2540E           |     | 1      | 2 mL     | 100 mL  | 555904 | 07/02/19 19:36 | HTL     | TAL IRV |
| Total/NA  | Prep     | 351.2           |     |        | 0.5 mL   | 25 mL   | 556300 | 07/05/19 14:00 | HTL     | TAL IRV |
| Total/NA  | Analysis | 351.2           |     | 10     |          |         | 556894 | 07/09/19 21:47 | HTL     | TAL IRV |
| Total/NA  | Analysis | 353.2           |     | 100    |          |         | 306826 | 07/10/19 11:23 | TCS     | TAL SAC |
| Total/NA  | Prep     | 365.2/365.3/365 |     |        | 0.025 mL | 50 mL   | 556226 | 07/05/19 12:08 | MMP     | TAL IRV |
| Total/NA  | Analysis | 365.3           |     | 1      |          |         | 556268 | 07/05/19 14:39 | MMP     | TAL IRV |
| Total/NA  | Prep     | Distill/Phenol  |     |        | 6 mL     | 6 mL    | 577256 | 07/09/19 12:53 | NVF     | TAL SAV |
| Total/NA  | Analysis | 420.1           |     | 10     | 6 mL     | 6 mL    | 577344 | 07/10/19 05:44 | NVF     | TAL SAV |
| Total/NA  | Analysis | ASTM D5057-90   |     | 1      | 50 g     | 50 mL   | 284432 | 07/10/19 15:19 | TAM     | TAL PIT |
| Total/NA  | Analysis | SM 2540B        |     | 1      | 2 mL     | 100 mL  | 555974 | 07/02/19 19:36 | XL      | TAL IRV |
| Total/NA  | Prep     | Distill/CN      |     |        | 50 mL    | 50 mL   | 556015 | 07/03/19 10:24 | KMY     | TAL IRV |
| Total/NA  | Analysis | SM 4500 CN E    |     | 1      |          |         | 556040 | 07/03/19 12:39 | KMY     | TAL IRV |
| Total/NA  | Prep     | SM 4500 NH3 B   |     |        | 0.1 mL   | 50 mL   | 556152 | 07/05/19 04:00 | ΥZ      | TAL IRV |
| Total/NA  | Analysis | SM 4500 NH3 D   |     | 1      |          |         | 556165 | 07/05/19 06:00 | YZ      | TAL IRV |
| Total/NA  | Analysis | SM 5220D        |     | 250    | 2 mL     | 2 mL    | 556931 | 07/10/19 16:46 | KYP     | TAL IRV |
| Total/NA  | Analysis | Total Nitrogen  |     | 1      |          |         | 557104 | 07/11/19 15:16 | TLN     | TAL IRV |

#### Client Sample ID: 06 25 BUTCH DUP Date Collected: 06/25/19 08:15 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-3

Matrix: Water

|                   | Batch    | Batch       | _   | Dil    | Initial | Final   | Batch  | Prepared       |         |         |
|-------------------|----------|-------------|-----|--------|---------|---------|--------|----------------|---------|---------|
| Prep Type         | Туре     | Method      | Run | Factor | Amount  | Amount  | Number | or Analyzed    | Analyst | Lab     |
| Total/NA          | Analysis | 8260B       |     | 1      | 10 mL   | 10 mL   | 556388 | 07/08/19 17:29 | TCN     | TAL IRV |
| Total/NA          | Analysis | 8260B       | RA  | 1      | 10 mL   | 10 mL   | 556543 | 07/09/19 06:29 | JB      | TAL IRV |
| Total/NA          | Prep     | 625         |     |        | 100 mL  | 2.0 mL  | 556176 | 07/05/19 08:23 | JAA     | TAL IRV |
| Total/NA          | Analysis | 625         |     | 2      |         |         | 556467 | 07/09/19 08:09 | L1B     | TAL IRV |
| Total/NA          | Prep     | 8315_W_Prep |     |        | 20 mL   | 1 mL    | 555931 | 07/03/19 08:09 | FTD     | TAL IRV |
| Total/NA          | Analysis | 8315A       |     | 1      |         |         | 556054 | 07/03/19 17:35 | D1D     | TAL IRV |
| Total/NA          | Analysis | NO3NO2 Calc |     | 1      |         |         | 556718 | 07/09/19 16:07 | NN      | TAL IRV |
| Total Recoverable | Prep     | 3005A       |     |        | 12.5 mL | 25 mL   | 556431 | 07/08/19 09:56 | BV      | TAL IRV |
| Total Recoverable | Analysis | 6010B       |     | 10     |         |         | 556566 | 07/08/19 18:33 | P1R     | TAL IRV |
| Total/NA          | Prep     | 7470A       |     |        | 20 mL   | 20 mL   | 556247 | 07/05/19 13:01 | EMS     | TAL IRV |
| Total/NA          | Analysis | 7470A       |     | 10     |         |         | 556352 | 07/06/19 10:45 | EMS     | TAL IRV |
| Total/NA          | Prep     | 1664A       |     |        | 950 mL  | 1000 mL | 556396 | 07/08/19 06:52 | JC1     | TAL IRV |
| Total/NA          | Analysis | 1664A       |     | 1      |         |         | 556472 | 07/08/19 13:23 | JC1     | TAL IRV |
| Total/NA          | Analysis | 2540E       |     | 1      | 5 mL    | 100 mL  | 555904 | 07/02/19 19:36 | HTL     | TAL IRV |
| Total/NA          | Prep     | 351.2       |     |        | 0.5 mL  | 25 mL   | 556300 | 07/05/19 14:00 | HTL     | TAL IRV |
| Total/NA          | Analysis | 351.2       |     | 5      |         |         | 556947 | 07/10/19 17:40 | HTL     | TAL IRV |
| Total/NA          | Analysis | 353.2       |     | 100    |         |         | 306826 | 07/10/19 11:27 | TCS     | TAL SAC |

## Client Sample ID: 06 25 BUTCH DUP Date Collected: 06/25/19 08:15 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-3 Matrix: Water

6 7

|           | Batch    | Batch           |     | Dil    | Initial  | Final  | Batch  | Prepared       |         |         |
|-----------|----------|-----------------|-----|--------|----------|--------|--------|----------------|---------|---------|
| Prep Type | Туре     | Method          | Run | Factor | Amount   | Amount | Number | or Analyzed    | Analyst | Lab     |
| Total/NA  | Prep     | 365.2/365.3/365 |     |        | 0.100 mL | 50 mL  | 556299 | 07/05/19 18:05 | MMP     | TAL IRV |
| Total/NA  | Analysis | 365.3           |     | 1      |          |        | 556353 | 07/06/19 13:33 | MMP     | TAL IRV |
| Total/NA  | Prep     | Distill/Phenol  |     |        | 6 mL     | 6 mL   | 577256 | 07/09/19 12:53 | NVF     | TAL SAV |
| Total/NA  | Analysis | 420.1           |     | 1      | 6 mL     | 6 mL   | 577344 | 07/09/19 17:41 | NVF     | TAL SAV |
| Total/NA  | Analysis | ASTM D5057-90   |     | 1      | 50 g     | 50 mL  | 284432 | 07/10/19 15:18 | TAM     | TAL PIT |
| Total/NA  | Analysis | SM 2540B        |     | 1      | 5 mL     | 100 mL | 555974 | 07/02/19 19:36 | XL      | TAL IRV |
| Total/NA  | Prep     | Distill/CN      |     |        | 50 mL    | 50 mL  | 556015 | 07/03/19 10:24 | KMY     | TAL IRV |
| Total/NA  | Analysis | SM 4500 CN E    |     | 1      |          |        | 556040 | 07/03/19 12:39 | KMY     | TAL IRV |
| Total/NA  | Prep     | SM 4500 NH3 B   |     |        | 1.0 mL   | 50 mL  | 556152 | 07/05/19 04:00 | ΥZ      | TAL IRV |
| Total/NA  | Analysis | SM 4500 NH3 D   |     | 1      |          |        | 556165 | 07/05/19 06:00 | YZ      | TAL IRV |
| Total/NA  | Analysis | SM 5220D        |     | 50     | 2 mL     | 2 mL   | 556931 | 07/10/19 16:46 | KYP     | TAL IRV |
| Total/NA  | Analysis | Total Nitrogen  |     | 1      |          |        | 557104 | 07/11/19 15:16 | TLN     | TAL IRV |

#### **Client Sample ID: BUTCHER** Date Collected: 06/26/19 06:06 Date Received: 07/02/19 10:10

#### Lab Sample ID: 440-245042-4 **Matrix: Water**

|                       | Batch            | Batch                | _   | Dil    | Initial         | Final           | Batch            | Prepared                         |                |                    |
|-----------------------|------------------|----------------------|-----|--------|-----------------|-----------------|------------------|----------------------------------|----------------|--------------------|
| Prep Type<br>Total/NA | Analysis         | - Method<br>8260B    | Run | Factor | Amount<br>10 mL | Amount<br>10 mL | Number<br>556591 | or Analyzed                      | Analyst<br>TCN | TAL IR             |
|                       | ,                |                      |     | 1      |                 |                 |                  |                                  |                |                    |
| Total/NA<br>Total/NA  | Prep<br>Analysis | 625<br>625           |     | 2      | 100 mL          | 2.0 mL          | 556176<br>556467 | 07/05/19 08:23<br>07/09/19 08:33 |                | TAL IR<br>TAL IR   |
|                       |                  |                      |     | 2      | <b>00</b> I     |                 |                  |                                  |                |                    |
| Γotal/NA<br>Γotal/NA  | Prep             | 8315_W_Prep<br>8315A |     | 1      | 20 mL           | 1 mL            | 555931<br>556054 | 07/03/19 08:09<br>07/03/19 17:56 |                | TAL IR'<br>TAL IR' |
|                       | Analysis         |                      |     | -      |                 |                 |                  |                                  |                |                    |
| Total/NA              | Analysis         | NO3NO2 Calc          |     | 1      |                 |                 | 556718           | 07/09/19 16:07                   | NN             | TAL IR             |
| Total Recoverable     | Prep             | 3005A                |     |        | 25 mL           | 25 mL           | 555968           | 07/03/19 08:03                   | BV             | TAL IR\            |
| Total Recoverable     | Analysis         | 6010B                |     | 1      |                 |                 | 556263           | 07/05/19 12:11                   | P1R            | TAL IR             |
| Total/NA              | Prep             | 7470A                |     |        | 20 mL           | 20 mL           | 556247           | 07/05/19 13:01                   | EMS            | TAL IR             |
| Total/NA              | Analysis         | 7470A                |     | 10     |                 |                 | 556352           | 07/06/19 10:47                   | EMS            | TAL IR             |
| Total/NA              | Prep             | 1664A                |     |        | 985 mL          | 1000 mL         | 556396           | 07/08/19 06:52                   | JC1            | TAL IR             |
| Total/NA              | Analysis         | 1664A                |     | 1      |                 |                 | 556472           | 07/08/19 13:23                   | JC1            | TAL IR             |
| Total/NA              | Analysis         | 2540E                |     | 1      | 5 mL            | 100 mL          | 555904           | 07/02/19 19:37                   | HTL            | TAL IR             |
| Total/NA              | Prep             | 351.2                |     |        | 0.5 mL          | 25 mL           | 556300           | 07/05/19 14:00                   | HTL            | TAL IR             |
| Total/NA              | Analysis         | 351.2                |     | 1      |                 |                 | 556894           | 07/09/19 21:47                   | HTL            | TAL IR             |
| Total/NA              | Analysis         | 353.2                |     | 100    |                 |                 | 306826           | 07/10/19 11:31                   | TCS            | TAL SA             |
| Total/NA              | Prep             | 365.2/365.3/365      |     |        | 0.100 mL        | 50 mL           | 556299           | 07/05/19 18:05                   | MMP            | TAL IR             |
| Total/NA              | Analysis         | 365.3                |     | 1      |                 |                 | 556353           | 07/06/19 13:33                   | MMP            | TAL IR             |
| Total/NA              | Prep             | Distill/Phenol       |     |        | 6 mL            | 6 mL            | 577256           | 07/09/19 12:53                   | NVF            | TAL SA             |
| Total/NA              | Analysis         | 420.1                |     | 1      | 6 mL            | 6 mL            | 577344           | 07/09/19 17:45                   | NVF            | TAL SA             |
| Total/NA              | Analysis         | ASTM D5057-90        |     | 1      | 50 g            | 50 mL           | 284432           | 07/10/19 15:16                   | ТАМ            | TAL PI             |
| Total/NA              | Analysis         | SM 2540B             |     | 1      | 5 mL            | 100 mL          | 555974           | 07/02/19 19:36                   | XL             | TAL IR             |
| Total/NA              | Prep             | Distill/CN           |     |        | 50 mL           | 50 mL           | 556015           | 07/03/19 10:24                   | KMY            | TAL IR             |
| Total/NA              | Analysis         | SM 4500 CN E         |     | 1      |                 |                 | 556040           | 07/03/19 12:39                   | KMY            | TAL IR             |

## Client Sample ID: BUTCHER Date Collected: 06/26/19 06:06 Date Received: 07/02/19 10:10

|           | Batch    | Batch          |     | Dil    | Initial | Final  | Batch  | Prepared       |         |         |
|-----------|----------|----------------|-----|--------|---------|--------|--------|----------------|---------|---------|
| Prep Type | Туре     | Method         | Run | Factor | Amount  | Amount | Number | or Analyzed    | Analyst | Lab     |
| Total/NA  | Prep     | SM 4500 NH3 B  |     |        | 2.0 mL  | 50 mL  | 556152 | 07/05/19 04:00 | YZ      | TAL IRV |
| Total/NA  | Analysis | SM 4500 NH3 D  |     | 1      |         |        | 556165 | 07/05/19 06:00 | YZ      | TAL IRV |
| Total/NA  | Analysis | SM 5220D       |     | 20     | 2 mL    | 2 mL   | 556931 | 07/10/19 16:46 | KYP     | TAL IRV |
| Total/NA  | Analysis | Total Nitrogen |     | 1      |         |        | 557104 | 07/11/19 15:16 | TLN     | TAL IRV |

### Client Sample ID: OD STREAMS Date Collected: 06/26/19 06:19 Date Received: 07/02/19 10:10

### Lab Sample ID: 440-245042-4 Matrix: Water

Lab Sample ID: 440-245042-5

Matrix: Water

| Prep Type         | Batch<br>Type | Batch<br>Method | Run | Dil<br>Factor | Initial<br>Amount | Final<br>Amount | Batch<br>Number | Prepared<br>or Analyzed | Analyst | Lab     |
|-------------------|---------------|-----------------|-----|---------------|-------------------|-----------------|-----------------|-------------------------|---------|---------|
| Total/NA          | Analysis      | 8260B           |     | 5             | 10 mL             | 10 mL           | 556394          | 07/08/19 16:56          | TCN     | TAL IRV |
| Total/NA          | Prep          | 625             |     |               | 100 mL            | 2.0 mL          | 556176          | 07/05/19 08:23          | JAA     | TAL IRV |
| Total/NA          | Analysis      | 625             |     | 10            |                   |                 | 556467          | 07/09/19 08:58          | L1B     | TAL IRV |
| Total/NA          | Prep          | 8315_W_Prep     |     |               | 20 mL             | 1 mL            | 555931          | 07/03/19 08:09          | FTD     | TAL IRV |
| Total/NA          | Analysis      | 8315A           |     | 1             |                   |                 | 556054          | 07/03/19 18:17          | D1D     | TAL IRV |
| Total/NA          | Analysis      | NO3NO2 Calc     |     | 1             |                   |                 | 556718          | 07/09/19 16:07          | NN      | TAL IRV |
| Total Recoverable | Prep          | 3005A           |     |               | 12.5 mL           | 25 mL           | 556431          | 07/08/19 09:56          | BV      | TAL IRV |
| Total Recoverable | Analysis      | 6010B           |     | 10            |                   |                 | 556566          | 07/08/19 18:35          | P1R     | TAL IRV |
| Total/NA          | Prep          | 7470A           |     |               | 20 mL             | 20 mL           | 556247          | 07/05/19 13:01          | EMS     | TAL IRV |
| Total/NA          | Analysis      | 7470A           |     | 10            |                   |                 | 556352          | 07/06/19 10:49          | EMS     | TAL IRV |
| Total/NA          | Prep          | 1664A           |     |               | 955 mL            | 1000 mL         | 556396          | 07/08/19 06:52          | JC1     | TAL IRV |
| Total/NA          | Analysis      | 1664A           |     | 1             |                   |                 | 556472          | 07/08/19 13:23          | JC1     | TAL IRV |
| Total/NA          | Analysis      | 2540E           |     | 1             | 2 mL              | 100 mL          | 555904          | 07/02/19 19:37          | HTL     | TAL IRV |
| Total/NA          | Prep          | 351.2           |     |               | 0.5 mL            | 25 mL           | 556300          | 07/05/19 14:00          | HTL     | TAL IRV |
| Total/NA          | Analysis      | 351.2           |     | 10            |                   |                 | 556947          | 07/10/19 17:40          | HTL     | TAL IRV |
| Total/NA          | Analysis      | 353.2           |     | 100           |                   |                 | 306826          | 07/10/19 11:35          | TCS     | TAL SAC |
| Total/NA          | Prep          | 365.2/365.3/365 |     |               | 0.025 mL          | 50 mL           | 556226          | 07/05/19 12:08          | MMP     | TAL IRV |
| Total/NA          | Analysis      | 365.3           |     | 1             |                   |                 | 556268          | 07/05/19 14:40          | MMP     | TAL IRV |
| Total/NA          | Prep          | Distill/Phenol  |     |               | 6 mL              | 6 mL            | 577256          | 07/09/19 12:53          | NVF     | TAL SAV |
| Total/NA          | Analysis      | 420.1           |     | 10            | 6 mL              | 6 mL            | 577344          | 07/10/19 05:44          | NVF     | TAL SAV |
| Total/NA          | Analysis      | ASTM D5057-90   |     | 1             | 50 g              | 50 mL           | 284432          | 07/10/19 15:15          | ТАМ     | TAL PIT |
| Total/NA          | Analysis      | SM 2540B        |     | 1             | 2 mL              | 100 mL          | 555974          | 07/02/19 19:36          | XL      | TAL IRV |
| Total/NA          | Prep          | Distill/CN      |     |               | 50 mL             | 50 mL           | 556121          | 07/03/19 19:20          | QTN     | TAL IRV |
| Total/NA          | Analysis      | SM 4500 CN E    |     | 1             |                   |                 | 556276          | 07/05/19 15:10          | QTN     | TAL IRV |
| Total/NA          | Prep          | SM 4500 NH3 B   |     |               | 0.1 mL            | 50 mL           | 556152          | 07/05/19 04:00          | YZ      | TAL IRV |
| Total/NA          | Analysis      | SM 4500 NH3 D   |     | 1             |                   |                 | 556165          | 07/05/19 06:00          | ΥZ      | TAL IRV |
| Total/NA          | Analysis      | SM 5220D        |     | 250           | 2 mL              | 2 mL            | 556931          | 07/10/19 16:46          | KYP     | TAL IRV |
| Total/NA          | Analysis      | Total Nitrogen  |     | 1             |                   |                 | 557104          | 07/11/19 15:16          | TLN     | TAL IRV |
| _                 |               |                 |     |               |                   |                 |                 |                         |         |         |

## Client Sample ID: BUTCHER Date Collected: 06/27/19 06:09 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-6 Matrix: Water

|                   | Batch    | Batch           |     | Dil    | Initial  | Final   | Batch  | Prepared       |         |         |
|-------------------|----------|-----------------|-----|--------|----------|---------|--------|----------------|---------|---------|
| Prep Туре         | Туре     | Method          | Run | Factor | Amount   | Amount  | Number | or Analyzed    | Analyst | Lab     |
| Total/NA          | Analysis | 8260B           |     | 1      | 10 mL    | 10 mL   | 556591 | 07/09/19 09:58 | TCN     | TAL IRV |
| Total/NA          | Prep     | 625             |     |        | 200 mL   | 2.0 mL  | 556176 | 07/05/19 08:23 | JAA     | TAL IRV |
| Total/NA          | Analysis | 625             |     | 2      |          |         | 556467 | 07/09/19 09:22 | L1B     | TAL IRV |
| Total/NA          | Prep     | 8315_W_Prep     |     |        | 20 mL    | 1 mL    | 555931 | 07/03/19 08:09 | FTD     | TAL IRV |
| Total/NA          | Analysis | 8315A           |     | 1      |          |         | 556054 | 07/03/19 18:38 | D1D     | TAL IRV |
| Total/NA          | Analysis | NO3NO2 Calc     |     | 1      |          |         | 556718 | 07/09/19 16:07 | NN      | TAL IRV |
| Total Recoverable | Prep     | 3005A           |     |        | 25 mL    | 25 mL   | 555968 | 07/03/19 08:03 | BV      | TAL IRV |
| Total Recoverable | Analysis | 6010B           |     | 1      |          |         | 556263 | 07/05/19 12:14 | P1R     | TAL IRV |
| Total/NA          | Prep     | 7470A           |     |        | 20 mL    | 20 mL   | 556247 | 07/05/19 13:01 | EMS     | TAL IRV |
| Total/NA          | Analysis | 7470A           |     | 10     |          |         | 556352 | 07/06/19 10:52 | EMS     | TAL IRV |
| Total/NA          | Prep     | 1664A           |     |        | 925 mL   | 1000 mL | 556396 | 07/08/19 06:52 | JC1     | TAL IRV |
| Total/NA          | Analysis | 1664A           |     | 1      |          |         | 556472 | 07/08/19 13:23 | JC1     | TAL IRV |
| Total/NA          | Analysis | 2540E           |     | 1      | 5 mL     | 100 mL  | 555904 | 07/02/19 19:37 | HTL     | TAL IRV |
| Total/NA          | Prep     | 351.2           |     |        | 0.5 mL   | 25 mL   | 556300 | 07/05/19 14:00 | HTL     | TAL IRV |
| Total/NA          | Analysis | 351.2           |     | 1      |          |         | 556894 | 07/09/19 21:47 | HTL     | TAL IRV |
| Total/NA          | Analysis | 353.2           |     | 100    |          |         | 306826 | 07/10/19 11:39 | TCS     | TAL SAC |
| Total/NA          | Prep     | 365.2/365.3/365 |     |        | 0.100 mL | 50 mL   | 556299 | 07/05/19 18:05 | MMP     | TAL IRV |
| Total/NA          | Analysis | 365.3           |     | 1      |          |         | 556353 | 07/06/19 13:33 | MMP     | TAL IRV |
| Total/NA          | Prep     | Distill/Phenol  |     |        | 6 mL     | 6 mL    | 577256 | 07/09/19 12:53 | NVF     | TAL SAV |
| Total/NA          | Analysis | 420.1           |     | 1      | 6 mL     | 6 mL    | 577344 | 07/09/19 17:45 | NVF     | TAL SAV |
| Total/NA          | Analysis | ASTM D5057-90   |     | 1      | 50 g     | 50 mL   | 284432 | 07/10/19 15:13 | TAM     | TAL PIT |
| Total/NA          | Analysis | SM 2540B        |     | 1      | 5 mL     | 100 mL  | 555974 | 07/02/19 19:36 | XL      | TAL IRV |
| Total/NA          | Prep     | Distill/CN      |     |        | 50 mL    | 50 mL   | 556121 | 07/03/19 19:20 | QTN     | TAL IRV |
| Total/NA          | Analysis | SM 4500 CN E    |     | 1      |          |         | 556276 | 07/05/19 15:10 | QTN     | TAL IRV |
| Total/NA          | Prep     | SM 4500 NH3 B   |     |        | 2.0 mL   | 50 mL   | 556152 | 07/05/19 04:00 | YZ      | TAL IRV |
| Total/NA          | Analysis | SM 4500 NH3 D   |     | 1      |          |         | 556165 | 07/05/19 06:00 | YZ      | TAL IRV |
| Total/NA          | Analysis | SM 5220D        |     | 20     | 2 mL     | 2 mL    | 556931 | 07/10/19 16:47 | KYP     | TAL IRV |
| Total/NA          | Analysis | Total Nitrogen  |     | 1      |          |         | 557104 | 07/11/19 15:16 | TLN     | TAL IRV |

### Client Sample ID: OD STREAMS Date Collected: 06/27/19 06:22 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-7 Matrix: Water

|                   | Batch    | Batch       |     | Dil    | Initial | Final  | Batch  | Prepared       |         |         |
|-------------------|----------|-------------|-----|--------|---------|--------|--------|----------------|---------|---------|
| Prep Type         | Туре     | Method      | Run | Factor | Amount  | Amount | Number | or Analyzed    | Analyst | Lab     |
| Total/NA          | Analysis | 8260B       |     | 5      | 10 mL   | 10 mL  | 556394 | 07/08/19 17:56 | TCN     | TAL IRV |
| Total/NA          | Prep     | 625         |     |        | 100 mL  | 2.0 mL | 556176 | 07/05/19 08:23 | JAA     | TAL IRV |
| Total/NA          | Analysis | 625         |     | 10     |         |        | 556467 | 07/09/19 09:47 | L1B     | TAL IRV |
| Total/NA          | Prep     | 8315_W_Prep |     |        | 20 mL   | 1 mL   | 555931 | 07/03/19 08:09 | FTD     | TAL IRV |
| Total/NA          | Analysis | 8315A       |     | 1      |         |        | 556054 | 07/03/19 18:59 | D1D     | TAL IRV |
| Total/NA          | Analysis | NO3NO2 Calc |     | 1      |         |        | 556718 | 07/09/19 16:07 | NN      | TAL IRV |
| Total Recoverable | Prep     | 3005A       |     |        | 25 mL   | 25 mL  | 556431 | 07/08/19 09:56 | BV      | TAL IRV |
| Total Recoverable | Analysis | 6010B       |     | 10     |         |        | 556566 | 07/08/19 18:38 | P1R     | TAL IRV |

## Client Sample ID: OD STREAMS Date Collected: 06/27/19 06:22 Date Received: 07/02/19 10:10

## Lab Sample ID: 440-245042-7 Matrix: Water

|           | Batch    | Batch           |     | Dil    | Initial  | Final   | Batch  | Prepared       |         |         |
|-----------|----------|-----------------|-----|--------|----------|---------|--------|----------------|---------|---------|
| Prep Type | Туре     | Method          | Run | Factor | Amount   | Amount  | Number | or Analyzed    | Analyst | Lab     |
| Total/NA  | Prep     | 7470A           |     |        | 20 mL    | 20 mL   | 556247 | 07/05/19 13:01 | EMS     | TAL IRV |
| Total/NA  | Analysis | 7470A           |     | 10     |          |         | 556352 | 07/06/19 10:54 | EMS     | TAL IRV |
| Total/NA  | Prep     | 1664A           |     |        | 940 mL   | 1000 mL | 556396 | 07/08/19 06:52 | JC1     | TAL IRV |
| Total/NA  | Analysis | 1664A           |     | 1      |          |         | 556472 | 07/08/19 13:23 | JC1     | TAL IRV |
| Total/NA  | Analysis | 2540E           |     | 1      | 2 mL     | 100 mL  | 555904 | 07/02/19 19:37 | HTL     | TAL IRV |
| Total/NA  | Prep     | 351.2           |     |        | 0.5 mL   | 25 mL   | 556300 | 07/05/19 14:00 | HTL     | TAL IRV |
| Total/NA  | Analysis | 351.2           |     | 10     |          |         | 556947 | 07/10/19 17:40 | HTL     | TAL IRV |
| Total/NA  | Analysis | 353.2           |     | 100    |          |         | 306826 | 07/10/19 11:49 | TCS     | TAL SAC |
| Total/NA  | Prep     | 365.2/365.3/365 |     |        | 0.025 mL | 50 mL   | 556226 | 07/05/19 12:08 | MMP     | TAL IRV |
| Total/NA  | Analysis | 365.3           |     | 1      |          |         | 556268 | 07/05/19 14:40 | MMP     | TAL IRV |
| Total/NA  | Prep     | Distill/Phenol  |     |        | 6 mL     | 6 mL    | 577256 | 07/09/19 12:53 | NVF     | TAL SAV |
| Total/NA  | Analysis | 420.1           |     | 20     | 6 mL     | 6 mL    | 577344 | 07/10/19 06:10 | NVF     | TAL SAV |
| Total/NA  | Analysis | ASTM D5057-90   |     | 1      | 50 g     | 50 mL   | 284432 | 07/10/19 15:12 | TAM     | TAL PIT |
| Total/NA  | Analysis | SM 2540B        |     | 1      | 5 mL     | 100 mL  | 555974 | 07/02/19 19:36 | XL      | TAL IRV |
| Total/NA  | Prep     | Distill/CN      |     |        | 50 mL    | 50 mL   | 556121 | 07/03/19 19:20 | QTN     | TAL IRV |
| Total/NA  | Analysis | SM 4500 CN E    |     | 1      |          |         | 556276 | 07/05/19 15:10 | QTN     | TAL IRV |
| Total/NA  | Prep     | SM 4500 NH3 B   |     |        | 0.1 mL   | 50 mL   | 556152 | 07/05/19 04:00 | ΥZ      | TAL IRV |
| Total/NA  | Analysis | SM 4500 NH3 D   |     | 1      |          |         | 556165 | 07/05/19 06:00 | ΥZ      | TAL IRV |
| Total/NA  | Analysis | SM 5220D        |     | 250    | 2 mL     | 2 mL    | 556931 | 07/10/19 16:47 | KYP     | TAL IRV |
| Total/NA  | Analysis | Total Nitrogen  |     | 1      |          |         | 557104 | 07/11/19 15:16 | TLN     | TAL IRV |

#### Laboratory References:

Physis Env = Physis Environmental Laboratories, 1904 Wright Circle, Anaheim, CA 92806

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Dil Fac

1

1

1

1

1

1

1

1

1

8

## Method: 8260B - Volatile Organic Compounds (GC/MS)

#### Lab Sample ID: MB 440-556388/4 **Matrix: Water**

## **Client Sample ID: Method Blank** Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

Analyzed

Analysis Batch: 556388 MB MB Analyte **Result Qualifier** RL MDL Unit Prepared D 1,2-Dichloropropane 2.0 0.25 ug/L 07/08/19 08:22 ND Benzene ND 2.0 0.25 ug/L 07/08/19 08:22 Chloroform ND 2.0 0.25 ug/L 07/08/19 08:22 Ethylbenzene 2.0 ND 0.25 ug/L 07/08/19 08:22 m,p-Xylene ND 2.0 0.50 ug/L 07/08/19 08:22 ND Methylene Chloride 5.0 1.1 ug/L 07/08/19 08:22 ND 2.0 07/08/19 08:22 o-Xylene 0.25 ug/L Toluene ND 2.0 0.25 ug/L 07/08/19 08:22 Xylenes, Total ND 2.0 0.25 ug/L 07/08/19 08:22

|                             | MB        | МВ        |          |          |                |         |  |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|--|
| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |  |
| 4-Bromofluorobenzene (Surr) | 100       |           | 80 - 120 |          | 07/08/19 08:22 | 1       |  |
| Dibromofluoromethane (Surr) | 90        |           | 76 - 132 |          | 07/08/19 08:22 | 1       |  |
| Toluene-d8 (Surr)           | 114       |           | 80 - 128 |          | 07/08/19 08:22 | 1       |  |

#### Lab Sample ID: LCS 440-556388/5 **Matrix: Water** Analysis Batch: 556388

|                     | Spike | LCS    | LCS       |      |   |      | %Rec.    |
|---------------------|-------|--------|-----------|------|---|------|----------|
| Analyte             | Added | Result | Qualifier | Unit | D | %Rec | Limits   |
| 1,2-Dichloropropane | 10.0  | 10.7   |           | ug/L |   | 107  | 67 _ 130 |
| Benzene             | 10.0  | 11.5   |           | ug/L |   | 115  | 68 - 130 |
| Chloroform          | 10.0  | 10.8   |           | ug/L |   | 108  | 70 - 130 |
| Ethylbenzene        | 10.0  | 13.5   | *         | ug/L |   | 135  | 70 - 130 |
| m,p-Xylene          | 10.0  | 12.8   |           | ug/L |   | 128  | 70 - 130 |
| Methylene Chloride  | 10.0  | 8.37   |           | ug/L |   | 84   | 52 - 130 |
| o-Xylene            | 10.0  | 12.5   |           | ug/L |   | 125  | 70 - 130 |
| Toluene             | 10.0  | 12.9   |           | ug/L |   | 129  | 70 - 130 |

|                             | LCS       | LCS       |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 99        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 89        |           | 76 - 132 |
| Toluene-d8 (Surr)           | 108       |           | 80 - 128 |

#### Lab Sample ID: 440-244865-A-2 MS **Matrix: Water** Analysis Batch: 556388

| -                   | Sample | Sample    | Spike | MS     | MS        |      |   |      | %Rec.    |  |
|---------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|--|
| Analyte             | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   |  |
| 1,2-Dichloropropane | ND     |           | 250   | 233    |           | ug/L |   | 93   | 69 - 130 |  |
| Benzene             | 1200   |           | 250   | 1280   | 4         | ug/L |   | 27   | 66 - 130 |  |
| Chloroform          | ND     |           | 250   | 245    |           | ug/L |   | 98   | 70 - 130 |  |
| Ethylbenzene        | 71     | *         | 250   | 361    |           | ug/L |   | 116  | 70 - 130 |  |
| m,p-Xylene          | 66     |           | 250   | 342    |           | ug/L |   | 110  | 70 - 133 |  |
| Methylene Chloride  | ND     |           | 250   | 208    |           | ug/L |   | 83   | 52 - 130 |  |
| o-Xylene            | 43     | J         | 250   | 325    |           | ug/L |   | 113  | 70 - 133 |  |
| Toluene             | 37     | J         | 250   | 321    |           | ug/L |   | 114  | 70 - 130 |  |

Eurofins TestAmerica, Irvine

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

## QC Sample Results

Prep Type: Total/NA

5 8

#### Lab Sample ID: 440-244865-A-2 MS Matrix: Water Analysis Batch: 556388

|                             | MS        | MS        |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 98        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 88        |           | 76 - 132 |
| Toluene-d8 (Surr)           | 107       |           | 80 - 128 |

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

## Lab Sample ID: 440-244865-A-2 MSD **Matrix: Water**

#### Analysis Batch: 556388 RPD MSD MSD Sample Sample Spike %Rec. **Result Qualifier** Added **Result Qualifier** %Rec Limits RPD Limit Analyte Unit D ND 1,2-Dichloropropane 250 244 ug/L 97 69 - 130 5 20 Benzene 1200 250 1390 4 ug/L 68 66 - 130 8 20 Chloroform ND 250 257 70 - 130 20 ug/L 103 5 Ethylbenzene 71 250 379 ug/L 123 70 - 130 5 20 66 250 361 25 m,p-Xylene ug/L 118 70 - 133 5 ND 250 228 20 Methylene Chloride ug/L 91 52 - 130 9 o-Xylene 43 250 342 ug/L 119 70 - 133 5 20 Ĵ Toluene 37 J 250 336 ug/L 120 70 - 130 5 20 MSD MSD

|                             | 10/30     | 14130     |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 98        |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 90        |           | 76 - 132 |
| Toluene-d8 (Surr)           | 108       |           | 80 - 128 |

#### Lab Sample ID: MB 440-556394/4 Matrix: Water Analysis Batch: 556394

Toluene-d8 (Surr)

#### MB MB Result Qualifier RL MDL Unit Prepared Dil Fac Analyte D Analyzed 1,2-Dichloropropane ND 2.0 0.25 ug/L 07/08/19 08:27 1 Benzene ND 2.0 0.25 ug/L 07/08/19 08:27 1 Chloroform ND 2.0 0.25 ug/L 07/08/19 08:27 1 2.0 Ethylbenzene ND 0.25 ug/L 07/08/19 08:27 1 m,p-Xylene ND 2.0 0.50 ug/L 07/08/19 08:27 1 Methylene Chloride ND 5.0 1.1 ug/L 07/08/19 08:27 1 ND 2.0 o-Xylene 0.25 ug/L 07/08/19 08:27 1 Toluene ND 2.0 0.25 ug/L 07/08/19 08:27 1 Xylenes, Total 0.25 ug/L 07/08/19 08:27 ND 2.0 1 MB MB Surrogate Qualifier Limits Prepared Dil Fac %Recovery Analyzed 104 80 - 120 07/08/19 08:27 4-Bromofluorobenzene (Surr) 1 Dibromofluoromethane (Surr) 106 76 - 132 07/08/19 08:27 1 103 80 - 128 07/08/19 08:27

# **Client Sample ID: Matrix Spike Duplicate**

| Prep | Туре: | Total/NA |
|------|-------|----------|
|      |       |          |

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Client Sample ID: Matrix Spike** 

| Eurofins | TestAmerica, | Irvine |
|----------|--------------|--------|

1

**Client Sample ID: Lab Control Sample** 

90

94

92

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

### Lab Sample ID: LCS 440-556394/5 **Matrix: Water**

Analyte

Benzene

o-Xylene

Toluene

Methylene Chloride

#### Prep Type: Total/NA Analysis Batch: 556394 Spike LCS LCS %Rec. Added Result Qualifier Unit D %Rec Limits 1,2-Dichloropropane 10.0 104 67 - 130 10.4 ug/L 10.0 9.54 ug/L 95 68 - 130 Chloroform 10.0 10.4 ug/L 104 70 - 130 Ethylbenzene 10.0 9.46 ug/L 95 70 - 130 m,p-Xylene 10.0 9.64 ug/L 96 70 - 130

8.95

9.44

9.22

ug/L

ug/L

ug/L

10.0

10.0

10.0

|                             | LCS       | LCS       |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 106       |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 114       |           | 76 - 132 |
| Toluene-d8 (Surr)           | 98        |           | 80 - 128 |

#### Lab Sample ID: 440-244985-B-1 MS **Matrix: Water** Analysis Batch: 556394

|                     | Sample | Sample    | Spike | MS     | MS        |      |   |      | %Rec.    |
|---------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|
| Analyte             | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   |
| 1,2-Dichloropropane | ND     | F2        | 10.0  | 12.4   |           | ug/L |   | 124  | 69 - 130 |
| Benzene             | ND     | F2        | 10.0  | 11.5   |           | ug/L |   | 115  | 66 - 130 |
| Chloroform          | ND     | F2        | 10.0  | 12.4   |           | ug/L |   | 124  | 70 - 130 |
| Ethylbenzene        | ND     | F2        | 10.0  | 12.0   |           | ug/L |   | 120  | 70 - 130 |
| m,p-Xylene          | ND     | F2        | 10.0  | 11.7   |           | ug/L |   | 117  | 70 - 133 |
| Methylene Chloride  | ND     | F2        | 10.0  | 11.0   |           | ug/L |   | 110  | 52 - 130 |
| o-Xylene            | ND     | F2        | 10.0  | 11.7   |           | ug/L |   | 117  | 70 - 133 |
| Toluene             | ND     | F2        | 10.0  | 11.6   |           | ug/L |   | 116  | 70 - 130 |
|                     | MS     | MS        |       |        |           |      |   |      |          |

| Surrogate                   | %Recovery | Qualifier | Limits   |
|-----------------------------|-----------|-----------|----------|
| 4-Bromofluorobenzene (Surr) | 100       |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 111       |           | 76 - 132 |
| Toluene-d8 (Surr)           | 96        |           | 80 - 128 |

#### Lab Sample ID: 440-244985-B-1 MSD **Matrix: Water** Analysis Batch: 556394

| Analysis Datch. 550554 | Sample | Sample    | Spike | MSD    | MSD       |      |   |      | %Rec.    |     | RPD   |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|-----|-------|
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
| 1,2-Dichloropropane    | ND     | F2        | 10.0  | 10.0   | F2        | ug/L |   | 100  | 69 - 130 | 21  | 20    |
| Benzene                | ND     | F2        | 10.0  | 8.27   | F2        | ug/L |   | 83   | 66 - 130 | 32  | 20    |
| Chloroform             | ND     | F2        | 10.0  | 9.63   | F2        | ug/L |   | 96   | 70 - 130 | 25  | 20    |
| Ethylbenzene           | ND     | F2        | 10.0  | 9.22   | F2        | ug/L |   | 92   | 70 - 130 | 26  | 20    |
| m,p-Xylene             | ND     | F2        | 10.0  | 9.08   | F2        | ug/L |   | 91   | 70 - 133 | 26  | 25    |
| Methylene Chloride     | ND     | F2        | 10.0  | 8.37   | F2        | ug/L |   | 84   | 52 - 130 | 27  | 20    |
| o-Xylene               | ND     | F2        | 10.0  | 9.10   | F2        | ug/L |   | 91   | 70 - 133 | 25  | 20    |
| Toluene                | ND     | F2        | 10.0  | 8.84   | F2        | ug/L |   | 88   | 70 - 130 | 27  | 20    |

#### Eurofins TestAmerica, Irvine

**Prep Type: Total/NA** 

#### **Client Sample ID: Matrix Spike** Prep Type: Total/NA

52 - 130

70 - 130

70 - 130

**Client Sample ID: Matrix Spike Duplicate** 

## **QC Sample Results**

# Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued) Lab Sample ID: 440-244985-B-1 MSD Client Sample

#### Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

Prep Type: Total/NA

|                             | MSD       | MSD       |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 105       |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 110       |           | 76 - 132 |
| Toluene-d8 (Surr)           | 102       |           | 80 - 128 |

#### Lab Sample ID: MB 440-556543/5 Matrix: Water

## Analysis Batch: 556543

Analysis Batch: 556394

**Matrix: Water** 

|                             | MB        | MB        |          |      |      |   |          |                |         |
|-----------------------------|-----------|-----------|----------|------|------|---|----------|----------------|---------|
| Analyte                     | Result    | Qualifier | RL       | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
| 1,2-Dichloropropane         | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/08/19 20:58 | 1       |
| Benzene                     | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/08/19 20:58 | 1       |
| Chloroform                  | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/08/19 20:58 | 1       |
| Ethylbenzene                | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/08/19 20:58 | 1       |
| m,p-Xylene                  | ND        |           | 2.0      | 0.50 | ug/L |   |          | 07/08/19 20:58 | 1       |
| Methylene Chloride          | ND        |           | 5.0      | 1.1  | ug/L |   |          | 07/08/19 20:58 | 1       |
| o-Xylene                    | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/08/19 20:58 | 1       |
| Toluene                     | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/08/19 20:58 | 1       |
| Xylenes, Total              | ND        |           | 2.0      | 0.25 | ug/L |   |          | 07/08/19 20:58 | 1       |
|                             | MB        | MB        |          |      |      |   |          |                |         |
| Surrogate                   | %Recovery | Qualifier | Limits   |      |      |   | Prepared | Analyzed       | Dil Fac |
| 4-Bromofluorobenzene (Surr) |           |           | 80 - 120 |      |      | - |          | 07/08/19 20:58 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   |   | Prepared | Analyzed       |
|-----------------------------|-----------|-----------|----------|---|----------|----------------|
| 4-Bromofluorobenzene (Surr) | 110       |           | 80 - 120 | _ |          | 07/08/19 20:58 |
| Dibromofluoromethane (Surr) | 111       |           | 76 - 132 |   |          | 07/08/19 20:58 |
| Toluene-d8 (Surr)           | 99        |           | 80 - 128 |   |          | 07/08/19 20:58 |

#### Lab Sample ID: LCS 440-556543/6 Matrix: Water Analysis Batch: 556543

| · ·····, · ··· · · · · · · · · · · · · | Spike | LCS    | LCS       |      |   |      | %Rec.    |
|--|-------|--------|-----------|------|---|------|----------|
| Analyte                                | Added | Result | Qualifier | Unit | D | %Rec | Limits   |
| 1,2-Dichloropropane                    | 10.0  | 10.2   |           | ug/L |   | 102  | 67 - 130 |
| Benzene                                | 10.0  | 8.93   |           | ug/L |   | 89   | 68 - 130 |
| Chloroform                             | 10.0  | 10.2   |           | ug/L |   | 102  | 70 - 130 |
| Ethylbenzene                           | 10.0  | 9.03   |           | ug/L |   | 90   | 70 - 130 |
| m,p-Xylene                             | 10.0  | 9.95   |           | ug/L |   | 99   | 70 - 130 |
| Methylene Chloride                     | 10.0  | 8.27   |           | ug/L |   | 83   | 52 - 130 |
| o-Xylene                               | 10.0  | 9.78   |           | ug/L |   | 98   | 70 - 130 |
| Toluene                                | 10.0  | 9.10   |           | ug/L |   | 91   | 70 - 130 |
|  |       |        |           | -    |   |      |          |

|                             | LCS       | LCS       |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 102       |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 112       |           | 76 - 132 |
| Toluene-d8 (Surr)           | 98        |           | 80 - 128 |

Eurofins TestAmerica, Irvine

1

1

Prep Type: Total/NA

**Client Sample ID: Matrix Spike** 

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

96

#### Lab Sample ID: 440-245245-C-1 MS **Matrix: Water** Analysis Batch: 556543

| -                           |           |           |          |        |           |      |   |      |          |
|-----------------------------|-----------|-----------|----------|--------|-----------|------|---|------|----------|
|                             | Sample    | Sample    | Spike    | MS     | MS        |      |   |      | %Rec.    |
| Analyte                     | Result    | Qualifier | Added    | Result | Qualifier | Unit | D | %Rec | Limits   |
| 1,2-Dichloropropane         | ND        |           | 1000     | 1010   |           | ug/L |   | 101  | 69 - 130 |
| Benzene                     | 930       |           | 1000     | 1800   |           | ug/L |   | 87   | 66 - 130 |
| Chloroform                  | ND        |           | 1000     | 1010   |           | ug/L |   | 101  | 70 - 130 |
| Ethylbenzene                | 230       |           | 1000     | 1140   |           | ug/L |   | 91   | 70 - 130 |
| m,p-Xylene                  | 790       |           | 1000     | 1660   |           | ug/L |   | 86   | 70 - 133 |
| Methylene Chloride          | ND        |           | 1000     | 856    |           | ug/L |   | 86   | 52 - 130 |
| o-Xylene                    | 410       |           | 1000     | 1300   |           | ug/L |   | 89   | 70 - 133 |
| Toluene                     | 1400      | F1        | 1000     | 2120   |           | ug/L |   | 75   | 70 - 130 |
|                             | MS        | MS        |          |        |           |      |   |      |          |
| Surrogate                   | %Recovery | Qualifier | Limits   |        |           |      |   |      |          |
| 4-Bromofluorobenzene (Surr) | 103       |           | 80 - 120 |        |           |      |   |      |          |
| Dibromofluoromethane (Surr) | 115       |           | 76 - 132 |        |           |      |   |      |          |

80 - 128

#### Lab Sample ID: 440-245245-C-1 MSD **Matrix: Water** Analysis Batch: 556543

Toluene-d8 (Surr)

|                     | Sample | Sample    | Spike | MSD    | MSD       |      |   |      | %Rec.    |     | RPD   |
|---------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|-----|-------|
| Analyte             | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
| 1,2-Dichloropropane | ND     |           | 1000  | 1050   |           | ug/L |   | 105  | 69 - 130 | 4   | 20    |
| Benzene             | 930    |           | 1000  | 1770   |           | ug/L |   | 84   | 66 - 130 | 1   | 20    |
| Chloroform          | ND     |           | 1000  | 1040   |           | ug/L |   | 104  | 70 - 130 | 3   | 20    |
| Ethylbenzene        | 230    |           | 1000  | 1120   |           | ug/L |   | 89   | 70 - 130 | 2   | 20    |
| m,p-Xylene          | 790    |           | 1000  | 1640   |           | ug/L |   | 85   | 70 - 133 | 1   | 25    |
| Methylene Chloride  | ND     |           | 1000  | 877    |           | ug/L |   | 88   | 52 - 130 | 2   | 20    |
| o-Xylene            | 410    |           | 1000  | 1350   |           | ug/L |   | 94   | 70 - 133 | 4   | 20    |
| Toluene             | 1400   | F1        | 1000  | 2050   | F1        | ug/L |   | 68   | 70 - 130 | 3   | 20    |
|                     | MSD    | MSD       |       |        |           |      |   |      |          |     |       |

|                             | W3D       | WISD      |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 103       |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 114       |           | 76 - 132 |
| Toluene-d8 (Surr)           | 99        |           | 80 - 128 |

#### Lab Sample ID: MB 440-556591/4 **Matrix: Water** Analysis Batch: 556591

|                     | MB     | MB        |     |      |      |   |          |                |         |
|---------------------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Analyte             | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
| 1,2-Dichloropropane | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/09/19 08:29 | 1       |
| Benzene             | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/09/19 08:29 | 1       |
| Chloroform          | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/09/19 08:29 | 1       |
| Ethylbenzene        | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/09/19 08:29 | 1       |
| m,p-Xylene          | ND     |           | 2.0 | 0.50 | ug/L |   |          | 07/09/19 08:29 | 1       |
| Methylene Chloride  | ND     |           | 5.0 | 1.1  | ug/L |   |          | 07/09/19 08:29 | 1       |
| o-Xylene            | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/09/19 08:29 | 1       |
| Toluene             | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/09/19 08:29 | 1       |
| Xylenes, Total      | ND     |           | 2.0 | 0.25 | ug/L |   |          | 07/09/19 08:29 | 1       |

#### Eurofins TestAmerica, Irvine

## **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

## **QC Sample Results**

Prep Type: Total/NA

5

8

## Lab Sample ID: MB 440-556591/4 **Matrix: Water**

## Analysis Batch: 556591

|    |                            | MB        | MB        |          |
|----|----------------------------|-----------|-----------|----------|
| S  | urrogate                   | %Recovery | Qualifier | Limits   |
| 4- | Bromofluorobenzene (Surr)  | 98        |           | 80 - 120 |
| D  | ibromofluoromethane (Surr) | 109       |           | 76 - 132 |
| To | oluene-d8 (Surr)           | 98        |           | 80 - 128 |

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

#### Lab Sample ID: LCS 440-556591/5 **Matrix: Water**

#### Analysis Batch: 556591

| · ····· <b>,</b> ··· · ······· | Spike | LCS      | LCS       |      |        | %Rec.    |
|--------------------------------|-------|----------|-----------|------|--------|----------|
| Analyte                        | Added | Result ( | Qualifier | Unit | D %Rec | Limits   |
| 1,2-Dichloropropane            | 10.0  | 10.3     |           | ug/L | 103    | 67 - 130 |
| Benzene                        | 10.0  | 9.20     |           | ug/L | 92     | 68 - 130 |
| Chloroform                     | 10.0  | 10.2     |           | ug/L | 102    | 70 - 130 |
| Ethylbenzene                   | 10.0  | 9.20     |           | ug/L | 92     | 70 - 130 |
| m,p-Xylene                     | 10.0  | 9.47     |           | ug/L | 95     | 70 - 130 |
| Methylene Chloride             | 10.0  | 9.19     |           | ug/L | 92     | 52 - 130 |
| o-Xylene                       | 10.0  | 9.50     |           | ug/L | 95     | 70 - 130 |
| Toluene                        | 10.0  | 9.06     |           | ug/L | 91     | 70 - 130 |

|                             | LCS LCS          |            |  |  |  |  |  |  |  |
|-----------------------------|------------------|------------|--|--|--|--|--|--|--|
| Surrogate                   | %Recovery Qualif | ïer Limits |  |  |  |  |  |  |  |
| 4-Bromofluorobenzene (Surr) | 100              | 80 - 120   |  |  |  |  |  |  |  |
| Dibromofluoromethane (Surr) | 114              | 76 - 132   |  |  |  |  |  |  |  |
| Toluene-d8 (Surr)           | 94               | 80 - 128   |  |  |  |  |  |  |  |

#### Lab Sample ID: 440-245066-F-1 MSD Matrix: Water Analysis Batch: 556591

|                     | Sample | Sampla    | Spike | Men    | MSD       |      |   |      | %Rec.    |     | RPD   |
|---------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|-----|-------|
|                     | Sample | Sample    | Spike | NISD   | WISD      |      |   |      | %Rec.    |     | RFD   |
| Analyte             | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
| 1,2-Dichloropropane | ND     |           | 10.0  | 10.4   |           | ug/L |   | 104  | 69 - 130 | 9   | 20    |
| Benzene             | ND     |           | 10.0  | 9.22   |           | ug/L |   | 92   | 66 - 130 | 12  | 20    |
| Chloroform          | ND     |           | 10.0  | 10.3   |           | ug/L |   | 103  | 70 - 130 | 7   | 20    |
| Ethylbenzene        | ND     |           | 10.0  | 9.00   |           | ug/L |   | 90   | 70 - 130 | 5   | 20    |
| m,p-Xylene          | ND     |           | 10.0  | 9.15   |           | ug/L |   | 91   | 70 - 133 | 10  | 25    |
| Methylene Chloride  | ND     |           | 10.0  | 8.61   |           | ug/L |   | 86   | 52 - 130 | 11  | 20    |
| o-Xylene            | ND     |           | 10.0  | 9.33   |           | ug/L |   | 93   | 70 - 133 | 8   | 20    |
| Toluene             | ND     |           | 10.0  | 8.89   |           | ug/L |   | 89   | 70 - 130 | 7   | 20    |
|                     | MSD    | MSD       |       |        |           |      |   |      |          |     |       |

|                             | mee       | mob       |          |
|-----------------------------|-----------|-----------|----------|
| Surrogate                   | %Recovery | Qualifier | Limits   |
| 4-Bromofluorobenzene (Surr) | 100       |           | 80 - 120 |
| Dibromofluoromethane (Surr) | 111       |           | 76 - 132 |
| Toluene-d8 (Surr)           | 98        |           | 80 - 128 |

#### **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

# Prep Type: Total/NA

| Prepared | Analyzed       | Dil Fac |
|----------|----------------|---------|
|          | 07/09/19 08:29 | 1       |

**Client Sample ID: Method Blank** 

| 07/09/19 08:29 | 1 |
|----------------|---|
| 07/09/19 08:29 | 1 |
| 07/09/19 08:29 | 1 |

# **Client Sample ID: Lab Control Sample**

## Method: 625 - Semivolatile Organic Compounds (GC/MS)

| Analysis Batch: 556467   |  |             |   |               |       |       |      |              |  | Prep Batch:  | 556176                 |
|--|--|-------------|---|---------------|-------|-------|------|--------------|--|--|------------------------|
| -  | M  | B MB        |   |               |       |       |      |              |  |  |                        |
| Analyte  | Resu   | t Qualifier | RL  | r             | MDL ( | Unit  |      |              | Prepared                                       | Analyzed   | Dil Fac                |
| Bis(2-ethylhexyl) phthalate  | N  | )           | 20  |               | 4.0 L | ug/L  |      | 07/0         | 05/19 08:23                                    | 07/08/19 14:58   | 1                      |
|  | М  | 3 MB        |   |               |       |       |      |              |  |  |                        |
| Surrogate  | %Recover   | / Qualifier | Limits  |               |       |       |      | F            | Prepared                                       | Analyzed   | Dil Fac                |
| 2-Fluorobiphenyl   | 8  | 1           | 50 - 120  |               |       |       |      | 07/          | 05/19 08:23                                    | 07/08/19 14:58   | 1                      |
| 2-Fluorophenol   | 7  | 3           | 30 - 120  |               |       |       |      | 07/          | 05/19 08:23                                    | 07/08/19 14:58   | 1                      |
| 2,4,6-Tribromophenol   | 9  | )           | 40 - 120  |               |       |       |      | 07/          | 05/19 08:23                                    | 07/08/19 14:58   | 1                      |
|  | 7  | 5           | 45 - 120  |               |       |       |      | 07/          | 05/10 08.23                                    | 07/08/19 14:58   | 1                      |
| Nitrobenzene-d5  |  |             |   |               |       |       |      | • • • •      | 00.25  |  |                        |
| Nitrobenzene-d5<br>Terphenyl-d14   | 8  | )           | 10 - 150  |               |       |       |      |              |  | 07/08/19 14:58   | 1                      |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water  | 7  |             | 35 - 120  |               |       |       | Clie | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br><b>mple ID:</b>  | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:                    | Sample<br>otal/NA      |
|  | 7  |             |   | LCS           | LCS   |       | Clie | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br><b>mple ID:</b>  | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To                                   | f<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water  | 7  |             | 35 - 120  | LCS<br>Result |       | fier  | Clie | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br><b>mple ID:</b>  | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:                    | f<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467  | 7  |             | 35 <u>-</u> 120<br>Spike  | -             |       | fier  |      | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.           | f<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467<br>Analyte   | 7  | 5           | 35 - 120<br>Spike<br>Added  | Result        |       | fier  | Unit | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.<br>Limits | f<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467<br>Analyte   | - <b>556176/2-A</b>  | 5<br>       | 35 - 120<br>Spike<br>Added  | Result        |       | fier  | Unit | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.<br>Limits | 1<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467<br>Analyte<br>Bis(2-ethylhexyl) phthalate  | - <b>556176/2-A</b>  | 5<br>       | 35 - 120<br>Spike<br>Added<br>100   | Result        |       | fier  | Unit | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.<br>Limits | otal/NA                |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467<br>Analyte<br>Bis(2-ethylhexyl) phthalate<br>Surrogate   | - <b>556176/2-A</b>  | 5<br>       | 35 - 120<br>Spike<br>Added<br>100<br>Limits                                     | Result        |       | fier  | Unit | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.<br>Limits | 1<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467<br>Analyte<br>Bis(2-ethylhexyl) phthalate<br>Surrogate<br>2-Fluorobiphenyl   | -556176/2-A<br>LCS LC<br>%Recovery Qu<br>91                    | 5<br>       | 35 - 120<br>Spike<br>Added<br>100<br>Limits<br>50 - 120                         | Result        |       | fier  | Unit | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.<br>Limits | f<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467<br>Analyte<br>Bis(2-ethylhexyl) phthalate<br>Surrogate<br>2-Fluorobiphenyl<br>2-Fluorophenol                         | -556176/2-A<br>LCS LC<br>%Recovery Qu<br>91<br>86              | 5<br>       | 35 - 120<br>Spike<br>Added<br>100<br>Limits<br>50 - 120<br>30 - 120             | Result        |       | ifier | Unit | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.<br>Limits | f<br>Sample<br>otal/NA |
| Terphenyl-d14<br>Phenol-d6<br>Lab Sample ID: LCS 440<br>Matrix: Water<br>Analysis Batch: 556467<br>Analyte<br>Bis(2-ethylhexyl) phthalate<br>Surrogate<br>2-Fluorobiphenyl<br>2-Fluorophenol<br>2,4,6-Tribromophenol | 7<br>-556176/2-A<br>LCS LC<br><u>%Recovery Qu</u><br>86<br>104 | 5<br>       | 35 - 120<br>Spike<br>Added<br>100<br>Limits<br>50 - 120<br>30 - 120<br>40 - 120 | Result        |       | ifier | Unit | 07/0<br>07/0 | 05/19 08:23<br>05/19 08:23<br>mple ID:<br>%Rec | 07/08/19 14:58<br>07/08/19 14:58<br>Lab Control S<br>Prep Type: To<br>Prep Batch:<br>%Rec.<br>Limits | f<br>Sample<br>otal/NA |

| Analysis Batch: 556467      |       |        |           |      |   |      | Ргер ва  | itcn: 5 | 06176 |
|-----------------------------|-------|--------|-----------|------|---|------|----------|---------|-------|
|                             | Spike | LCSD   | LCSD      |      |   |      | %Rec.    |         | RPD   |
| Analyte                     | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD     | Limit |
| Bis(2-ethylhexyl) phthalate | 100   | 90.8   |           | ug/L |   | 91   | 10 - 150 | 18      | 35    |

| Surrogate            | LCSD<br>%Recovery | <br>Limits   |
|----------------------|-------------------|--------------|
| 2-Fluorobiphenyl     |                   | <br>50 - 120 |
| 2-Fluorophenol       | 74                | 30 - 120     |
| 2,4,6-Tribromophenol | 93                | 40 - 120     |
| Nitrobenzene-d5      | 80                | 45 - 120     |
| Terphenyl-d14        | 75                | 10 - 150     |
| Phenol-d6            | 79                | 35 - 120     |

## Method: 8315A - Carbonyl Compounds (HPLC)

| Lab Sample ID: MB 440-555931/1-A<br>Matrix: Water<br>Analysis Batch: 556054 |        | МВ        |       |        |      |   |                | le ID: Methoo<br>Prep Type: To<br>Prep Batch: | otal/NA |
|---|--------|-----------|-------|--------|------|---|----------------|---|---------|
| Analyte   | Result | Qualifier | RL    | MDL    | Unit | D | Prepared       | Analyzed                                      | Dil Fac |
| Formaldehyde  | ND     |           | 0.010 | 0.0050 | mg/L |   | 07/03/19 04:52 | 07/03/19 15:08                                | 1       |

Eurofins TestAmerica, Irvine

Page 33 of 99

Boron

Cadmium

Chromium

Magnesium

Copper

Job ID: 440-245042-1

## Method: 8315A - Carbonyl Compounds (HPLC)

| Lab Sample ID: LCS 440-5   | 55931/2-A            |   |  |   |  |  | Cli   | ent      | San   | nple ID:   |  |  |                           |
|--|----------------------|---|--|---|--|--|-------|----------|---|--|--|--|---------------------------|
| Matrix: Water  |                      |   |  |   |  |  |       |          |   |  | Prep Ty  |  |                           |
| Analysis Batch: 556054   |                      |   |  |   |  |  |       |          |   |  | Prep B   | atch:  | 55593 <sup>.</sup>        |
|  |                      |   | Spike  | LCS   | LCS  |  |       |          |   |  | %Rec.  |  |                           |
| Analyte  |                      |   | Added  | Result  | Qualit   | fier   | Unit  |          | D   | %Rec   | Limits   |  |                           |
| Formaldehyde   |                      |   | 0.0500   | 0.0573  |  |  | mg/L  |          |   | 115  | 70 - 129   |  |                           |
| Lab Sample ID: 440-245033<br>Matrix: Water   | 3-A-1-A MS           |   |  |   |  |  |       |          | Cli   | ient San   | nple ID:<br>Prep Ty  |  |                           |
| Analysis Batch: 556054   |                      |   |  |   |  |  |       |          |   |  | Prep B   |  |                           |
| Analysis Bateri. 000004  | Sample               | Sample  | Spike  | MS  | MS   |  |       |          |   |  | %Rec.  | uton. (  |                           |
| Analyte  |                      | Qualifier   | Added  | Result  |  | fier   | Unit  |          | D   | %Rec   | Limits   |  |                           |
| Formaldehyde   | 0.024                |   | 0.0500   | 0.0845  |  |  | mg/L  |          |   | 122  | 50 - 150   | · <u> </u>   |                           |
| Lab Sample ID: 440-245033<br>Matrix: Water<br>Analysis Batch: 556054   | 3-A-1-B MS<br>Sample |   | Spike  | MSD   | MSD  |  | Clien | t Sa     | amp   | le ID: Ma  | atrix Spi<br>Prep Ty<br>Prep B<br>%Rec.  | vpe: To  | otal/N                    |
| Analyte  | •                    | Qualifier   | Added  | Result  | -  | fier   | Unit  |          | D   | %Rec   | Limits   | RPD  |                           |
| Formaldehyde   | 0.024                |   | 0.0500   | 0.0851  |  |  | mg/L  |          |   | 123  | 50 - 150   | 1  |                           |
| Matrix: Water  | 5968/1-A             |   |  |   |  |  |       |          |   | nt Samp<br>rep Typ   | e: Total   | Recov  | verabl                    |
| Matrix: Water  | 5968/1-A             | MB MB   |  |   |  |  |       |          |   |  |  | Recov  | verabl                    |
| Matrix: Water<br>Analysis Batch: 556263  |                      | MB MB<br>sult Qualifie  | r RL   |   | MDL L  |  |       | D        | Ρ   |  | e: Total   | Recov<br>atch: {   | verabl<br>55596           |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte   |                      |   | r RL<br>0.10   |   | MDL U  |  |       | D        | P<br>Pr   | rep Typ  | e: Total<br>Prep B<br>Analy  | Recov<br>atch: {   | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum   |                      | sult Qualifie   |  | 0   |  | ng/L   |       | <u>D</u> | P<br>Pr<br>07/03  | rep Type   | e: Total<br>Prep B<br>Analy<br>07/05/19  | Recover<br>atch:   | verabl<br>55596           |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic  |                      | sult Qualifie   | 0.10   | 0<br>0.0  | .050 n   | ng/L<br>ng/L   |       | <u>D</u> | Pr<br>07/03<br>07/03  | rep Type<br>repared<br>3/19 08:03  | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19  | Recov<br>atch: 4<br>7zed<br>0 11:51<br>0 11:51   | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium  |                      | sult Qualifie   | 0.10   | 0<br>0.0<br>0.0   | .050 n<br>0089 n   | ng/L<br>ng/L<br>ng/L   |       | <u>D</u> | P<br>Pr<br>07/03<br>07/03   | rep Type<br>repared<br>3/19 08:03<br>3/19 08:03  | e: Total<br>Prep B<br>07/05/19<br>07/05/19<br>07/05/19   | Recov<br>atch: 4<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7  | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron   |                      | ND Qualifie   | 0.10<br>0.010<br>0.010   | 0<br>0.0<br>0.0   | 0.050 n<br>0089 n<br>0050 n  | mg/L<br>mg/L<br>mg/L<br>mg/L                                 |       | <u>D</u> | P<br>07/03<br>07/03<br>07/03  | rep Type<br>epared<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03   | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19  | Recover<br>atch: 4<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51   | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium  |                      | ND Qualifie   | 0.10<br>0.010<br>0.010<br>0.050  | 0<br>0.0<br>0.0<br>0<br>0.0   | 0.050 n<br>0089 n<br>0050 n<br>0.025 n   | ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L                         |       | <u>D</u> | P<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03  | rep Type<br>epared<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03   | e: Total<br>Prep B<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19   | Recover<br>atch: 4<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51  | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium  |                      | Sult Qualifie   | 0.10<br>0.010<br>0.010<br>0.050<br>0.050   | 0<br>0.0<br>0.0<br>0.0<br>0.0   | 0.050 n<br>0089 n<br>0050 n<br>0.025 n<br>0025 n   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L                 |       | <u>D</u> | Pr<br>07/0:<br>07/0:<br>07/0:<br>07/0:<br>07/0:<br>07/0:  | rep Type<br>epared<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03   | e: Total<br>Prep B<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19   | Recov<br>atch:<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51  | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper  |                      | Sult Qualifie   | 0.10<br>0.010<br>0.010<br>0.050<br>0.0050<br>0.0050  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0  | 0.050 n<br>0089 n<br>0050 n<br>0.025 n<br>0025 n<br>0025 n   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L                 |       | <u>D</u> | Pr<br>07/0:<br>07/0:<br>07/0:<br>07/0:<br>07/0:<br>07/0:  | rep Type<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03   | e: Total<br>Prep B<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19   | Recov<br>atch: (<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51  | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium   |                      | Sult Qualifie<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND | 0.10<br>0.010<br>0.050<br>0.050<br>0.0050<br>0.0050<br>0.010   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 0.050 n<br>0089 n<br>0050 n<br>0.025 n<br>0025 n<br>0025 n   | ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L         |       | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03   | rep Type<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03   | e: Total<br>Prep B<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19   | Recov<br>atch: (<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51<br>) 11:51  | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese  |                      | Sult Qualifie   | 0.10<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.0050<br>0.010<br>0.020   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0.0   | 0.050 n<br>0089 n<br>0050 n<br>0.025 n<br>0025 n<br>0025 n<br>0025 n<br>0.020 n  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |       | D        | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03  | rep Type<br>repared<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03<br>3/19 08:03  | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19  | Recov<br>atch:<br>7zed<br>11:51<br>11:51<br>11:51<br>11:51<br>11:51<br>11:51<br>11:51<br>11:51<br>11:51<br>11:51<br>11:51  | verabl<br>55596<br>Dil Fa |
| Lab Sample ID: MB 440-55<br>Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium  |                      | Sult Qualifie   | 0.10<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0.0<br>0<br>0.0  | 0.050 n<br>0.089 n<br>0.050 n<br>0.025 n<br>0.025 n<br>0.025 n<br>0.025 n<br>0.050 n<br>0.010 n  | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |       | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03  | rep Type<br>a)/19 08:03<br>a)/19 08:03  | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19  | Recov<br>atch: 4<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51<br>9 11:51   | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel  |                      | Sult Qualifie   | 0.10<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0   | .050         n           .089         n           .025         n           .010         n           .015         n           .0250         n           .0250         n           .0250         n           .0250         n           .0250         n           .0250         n | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |       | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03  | rep Type<br>repared<br>3/19 08:03<br>3/19 08:03  | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19  | Recov<br>atch: (<br>) 11:51<br>) 11:51  | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Titanium  |                      | Sult Qualifie   | 0.10<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010<br>0.010  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0   | 0.050 n<br>0.089 n<br>0.025 n<br>0.025 n<br>0.025 n<br>0.025 n<br>0.025 n<br>0.050 n<br>0.010 n<br>0.015 n<br>0.050 n<br>0.050 n   | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L |       | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03  | rep Type<br>3/19 08:03<br>3/19 08:03   | e: Total<br>Prep B<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19   | Recov<br>atch:<br>(zed<br>) 11:51<br>) 11:51  | verabl<br>55596<br>Dil Fa |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Nickel<br>Selenium<br>Fitanium<br>Zinc<br>Lab Sample ID: LCS 440-55<br>Matrix: Water  | Re                   | Sult Qualifie   | 0.10<br>0.010<br>0.010<br>0.050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010<br>0.010<br>0.010<br>0.0050                            | 0<br>0.0<br>0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | .050         n           .089         n           .025         n           .010         n           .015         n           .0250         n           .0250         n           .0250         n           .0250         n           .0250         n           .0250         n | mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | Cli   | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03   | rep Type<br>3/19 08:03<br>3/19 08:03   | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19  | Recov<br>atch: 4<br>7zed<br>9 11:51<br>9 11:51 | Sampleverabl              |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>C | Re                   | Sult Qualifie   | 0.10<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.010<br>0.010<br>0.010<br>0.010<br>0.010<br>0.010                   | 0<br>0.0<br>0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | LCS  | ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L | Cli   | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03   | rep Type<br>repared<br>3/19 08:03<br>3/19 08:05<br>10 00<br>10 00<br>10 00<br>10 00<br>10 00<br>10 00<br>10 00 | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D7/05/19<br>D | Recov<br>atch: 4<br>7zed<br>9 11:51<br>9 11:51 | Samply<br>verabl          |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>Chromium<br>C | Re                   | Sult Qualifie   | 0.10<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010<br>0.010<br>0.010<br>0.020<br>0.020                   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0   | LCS  | ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L |       | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>00<br>0000000000 | rep Type<br>Pepared<br>3/19 08:03<br>3/19 08:04<br>3/19 08:05<br>3/19 08:05<br>3/10 08:05        | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>0 | Recov<br>atch: 4<br>7zed<br>9 11:51<br>9 11:51 | Sampl<br>verabl           |
| Matrix: Water<br>Analysis Batch: 556263<br>Analyte<br>Aluminum<br>Arsenic<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Copper<br>Magnesium<br>Manganese<br>Vickel<br>Selenium  | Re                   | Sult Qualifie   | 0.10<br>0.010<br>0.050<br>0.0050<br>0.0050<br>0.010<br>0.020<br>0.020<br>0.010<br>0.010<br>0.010<br>0.020<br>0.020<br>0.020<br>0.020 | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0   | LCS  | ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L<br>ng/L | Unit  | <u>D</u> | Pr<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>07/03<br>00<br>0000000000 | rep Type<br>repared<br>3/19 08:03<br>3/19 08:04<br>3/19 08:05<br>3/10 08:05<br>3/10 08:05<br>3/10 08:05        | e: Total<br>Prep B<br>Analy<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>07/05/19<br>0 | Recov<br>atch: 4<br>7zed<br>9 11:51<br>9 11:51 | Sampl<br>verabl           |

Spike

Added

1.00

1.00

Lab Sample ID: LCS 440-555968/2-A

**Matrix: Water** 

Analyte

Nickel

Selenium

Titanium

Zinc

Manganese

Analysis Batch: 556263

Method: 6010B - Metals (ICP) (Continued)

Prep Batch: 555968

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total Recoverable** 

%Rec.

Limits

80 - 120

80 - 120

D %Rec

100

100

# 1 2 3 4 5 6 7 8

13

#### 1.00 0.960 mg/L 96 80 - 120 1.00 1.00 100 80 - 120 mg/L 1.00 0.990 mg/L 99 80 - 120 **Client Sample ID: Matrix Spike** Prep Type: Total Recoverable

Unit

mg/L

mg/L

LCS LCS

0.999

0.997

Result Qualifier

Lab Sample ID: 440-244854-A-3-B MS Matrix: Water

| Analysis Batch: 556263 | Sample | Sample    | Spike | MS     | MS        |      |   |      | Prep Batch: 555968<br>%Rec. |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|-----------------------------|
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits                      |
| Aluminum               | 0.20   |           | 1.00  | 1.26   |           | mg/L |   | 106  | 75 - 125                    |
| Arsenic                | ND     |           | 1.00  | 1.04   |           | mg/L |   | 104  | 75 - 125                    |
| Barium                 | ND     |           | 1.00  | 1.03   |           | mg/L |   | 103  | 75 - 125                    |
| Boron                  | ND     |           | 1.00  | 1.06   |           | mg/L |   | 106  | 75 - 125                    |
| Cadmium                | ND     |           | 1.00  | 1.02   |           | mg/L |   | 102  | 75 - 125                    |
| Chromium               | ND     |           | 1.00  | 1.03   |           | mg/L |   | 103  | 75 - 125                    |
| Copper                 | 0.041  |           | 1.00  | 1.10   |           | mg/L |   | 106  | 75 - 125                    |
| Magnesium              | 0.050  |           | 5.00  | 5.16   |           | mg/L |   | 102  | 75 - 125                    |
| Manganese              | ND     |           | 1.00  | 1.05   |           | mg/L |   | 105  | 75 - 125                    |
| Nickel                 | ND     |           | 1.00  | 1.03   |           | mg/L |   | 103  | 75 - 125                    |
| Selenium               | ND     |           | 1.00  | 0.992  |           | mg/L |   | 99   | 75 - 125                    |
| Titanium               | 0.0055 |           | 1.00  | 1.06   |           | mg/L |   | 105  | 75 - 125                    |
| Zinc                   | 0.073  |           | 1.00  | 1.07   |           | mg/L |   | 99   | 75 - 125                    |

#### Lab Sample ID: 440-244854-A-3-C MSD Matrix: Water Analysis Batch: 556263

#### Client Sample ID: Matrix Spike Duplicate Prep Type: Total Recoverable Prep Batch: 555968

|        |  |  |   |   |  |   |  | Ргер Ва  | itch: 5  | 00900  |
|--------|--|--|---|---|--|---|--|--|--|--|
| Sample | Sample   | Spike  | MSD   | MSD   |  |   |  | %Rec.  |  | RPD  |
| Result | Qualifier  | Added  | Result  | Qualifier   | Unit   | D   | %Rec   | Limits   | RPD  | Limit  |
| 0.20   |  | 1.00   | 1.22  |   | mg/L   |   | 102  | 75 - 125   | 3  | 20   |
| ND     |  | 1.00   | 1.00  |   | mg/L   |   | 100  | 75 - 125   | 3  | 20   |
| ND     |  | 1.00   | 0.992   |   | mg/L   |   | 99   | 75 - 125   | 4  | 20   |
| ND     |  | 1.00   | 1.03  |   | mg/L   |   | 103  | 75 - 125   | 3  | 20   |
| ND     |  | 1.00   | 0.993   |   | mg/L   |   | 99   | 75 - 125   | 3  | 20   |
| ND     |  | 1.00   | 1.01  |   | mg/L   |   | 101  | 75 - 125   | 2  | 20   |
| 0.041  |  | 1.00   | 1.07  |   | mg/L   |   | 103  | 75 - 125   | 3  | 20   |
| 0.050  |  | 5.00   | 4.94  |   | mg/L   |   | 98   | 75 - 125   | 4  | 20   |
| ND     |  | 1.00   | 1.02  |   | mg/L   |   | 102  | 75 - 125   | 3  | 20   |
| ND     |  | 1.00   | 1.01  |   | mg/L   |   | 101  | 75 - 125   | 3  | 20   |
| ND     |  | 1.00   | 0.965   |   | mg/L   |   | 96   | 75 - 125   | 3  | 20   |
| 0.0055 |  | 1.00   | 1.03  |   | mg/L   |   | 103  | 75 - 125   | 2  | 20   |
| 0.073  |  | 1.00   | 1.04  |   | mg/L   |   | 96   | 75 - 125   | 3  | 20   |
|        | Result<br>0.20<br>ND<br>ND<br>ND<br>ND<br>0.041<br>0.050<br>ND<br>ND<br>ND<br>0.0055 | ND<br>ND<br>ND<br>ND<br>0.041<br>0.050<br>ND<br>ND<br>ND<br>0.0055 | Result         Qualifier         Added           0.20         1.00         1.00           ND         1.00         0.041           0.050         5.00         1.00           ND         1.00         1.00 | Result         Qualifier         Added         Result           0.20         1.00         1.22           ND         1.00         1.00           ND         1.00         0.992           ND         1.00         0.993           ND         1.00         0.993           ND         1.00         1.01           0.041         1.00         1.07           0.050         5.00         4.94           ND         1.00         1.02           ND         1.00         1.01           ND         1.00         1.01           0.055         5.00         4.94           ND         1.00         1.01           ND         1.00         1.01 | Result         Qualifier         Added         Result         Qualifier           0.20         1.00         1.22         1.00         1.22           ND         1.00         1.00         1.00           ND         1.00         0.992         1.00           ND         1.00         0.993         1.01           ND         1.00         0.993         1.01           ND         1.00         1.01         1.01           0.041         1.00         1.02         1.02           ND         1.00         1.02         1.02           ND         1.00         1.01         1.02           ND         1.00         1.02         1.01           ND         1.00         1.02         1.01           ND         1.00         1.03         1.03 | Result         Qualifier         Added         Result         Qualifier         Unit           0.20         1.00         1.22         mg/L         mg/L           ND         1.00         1.00         mg/L           ND         1.00         0.992         mg/L           ND         1.00         0.992         mg/L           ND         1.00         0.993         mg/L           ND         1.00         1.01         mg/L           ND         1.00         1.01         mg/L           ND         1.00         1.01         mg/L           ND         1.00         1.07         mg/L           0.041         1.00         1.07         mg/L           0.050         5.00         4.94         mg/L           ND         1.00         1.02         mg/L           ND         1.00         1.01         mg/L           ND         1.00         1.01         mg/L           ND         1.00         1.01         mg/L           ND         1.00         0.965         mg/L           0.0055         1.00         1.03         mg/L | Result         Qualifier         Added         Result         Qualifier         Unit         D           0.20         1.00         1.22         mg/L         mg/L | Result         Qualifier         Added         Result         Qualifier         Unit         D         %Rec           0.20         1.00         1.22         mg/L         102         102           ND         1.00         1.00         mg/L         100         102           ND         1.00         0.992         mg/L         99           ND         1.00         0.992         mg/L         99           ND         1.00         0.993         mg/L         99           ND         1.00         0.993         mg/L         99           ND         1.00         1.01         mg/L         101           0.041         1.00         1.07         mg/L         103           0.050         5.00         4.94         mg/L         98           ND         1.00         1.02         mg/L         102           ND         1.00         1.01         mg/L         102           ND         1.00         1.01         mg/L         102           ND         1.00         0.965         mg/L         96           0.0055         1.00         1.03         mg/L         103 | Sample Sample         Spike         MSD         MSD         Unit         D         %Rec.           Result         Qualifier         Added         Result         Qualifier         Unit         D         %Rec.         Limits           0.20         1.00         1.22         mg/L         102         75.125           ND         1.00         1.00         mg/L         100         75.125           ND         1.00         0.992         mg/L         99         75.125           ND         1.00         0.992         mg/L         99         75.125           ND         1.00         0.993         mg/L         99         75.125           ND         1.00         0.993         mg/L         99         75.125           ND         1.00         1.01         mg/L         101         75.125           ND         1.00         1.01         mg/L         99         75.125           ND         1.00         1.07         mg/L         101         75.125           0.050         5.00         4.94         mg/L         98         75.125           ND         1.00         1.01         mg/L         101         75 | ResultQualifierAddedResultQualifierUnitD%RecLimitsRPD0.201.001.22mg/L10275 · 1253ND1.001.00mg/L10075 · 1253ND1.000.992mg/L9975 · 1254ND1.000.992mg/L10375 · 1253ND1.001.03mg/L9975 · 1253ND1.001.03mg/L9975 · 1253ND1.000.993mg/L9975 · 1253ND1.001.01mg/L10175 · 1253ND1.001.07mg/L10375 · 12530.0505.004.94mg/L9875 · 1253ND1.001.02mg/L10275 · 1253ND1.001.01mg/L10175 · 1253ND1.001.02mg/L9875 · 1253ND1.001.02mg/L10175 · 1253ND1.000.965mg/L9675 · 1253ND1.001.03mg/L10375 · 1253ND1.001.03mg/L10375 · 1253ND1.001.03mg/L10375 · 1253ND1.001.03mg/L10375 · 1253ND1.0 |

## Method: 6010B - Metals (ICP) (Continued)

#### Lab Sample ID: MB 440-556431/1-A Matrix: Water Analysis Batch: 556566

| · ·····, · ··· · · · · · · · · · · · · | МВ      | МВ        |        |        |      |   |                |                |         |
|--|---------|-----------|--------|--------|------|---|----------------|----------------|---------|
| Analyte                                | Result  | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
| Aluminum                               | ND      |           | 0.10   | 0.050  | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Arsenic                                | ND      |           | 0.010  | 0.0089 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Barium                                 | ND      |           | 0.010  | 0.0050 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Boron                                  | ND      |           | 0.050  | 0.025  | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Cadmium                                | ND      |           | 0.0050 | 0.0025 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Chromium                               | 0.00260 | J         | 0.0050 | 0.0025 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Copper                                 | ND      |           | 0.010  | 0.0050 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Magnesium                              | ND      |           | 0.020  | 0.010  | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Manganese                              | ND      |           | 0.020  | 0.015  | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Nickel                                 | ND      |           | 0.010  | 0.0050 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Selenium                               | ND      |           | 0.010  | 0.0087 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Titanium                               | ND      |           | 0.0050 | 0.0025 | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |
| Zinc                                   | ND      |           | 0.020  | 0.012  | mg/L |   | 07/08/19 09:56 | 07/08/19 17:32 | 1       |

#### Lab Sample ID: LCS 440-556431/2-A Matrix: Water Analysis Batch: 556566

| Analysis Batch: 556566 | Spike | LCS    | LCS       |      |   |      | Prep Batch: 556431<br>%Rec. |
|------------------------|-------|--------|-----------|------|---|------|-----------------------------|
| Analyte                | Added | Result | Qualifier | Unit | D | %Rec | Limits                      |
| Aluminum               | 1.00  | 0.917  |           | mg/L |   | 92   | 80 - 120                    |
| Arsenic                | 1.00  | 0.913  |           | mg/L |   | 91   | 80 - 120                    |
| Barium                 | 1.00  | 0.948  |           | mg/L |   | 95   | 80 - 120                    |
| Boron                  | 1.00  | 0.922  |           | mg/L |   | 92   | 80 - 120                    |
| Cadmium                | 1.00  | 0.928  |           | mg/L |   | 93   | 80 - 120                    |
| Chromium               | 1.00  | 0.934  |           | mg/L |   | 93   | 80 - 120                    |
| Copper                 | 1.00  | 0.951  |           | mg/L |   | 95   | 80 - 120                    |
| Magnesium              | 5.00  | 4.69   |           | mg/L |   | 94   | 80 - 120                    |
| Manganese              | 1.00  | 0.938  |           | mg/L |   | 94   | 80 - 120                    |
| Nickel                 | 1.00  | 0.940  |           | mg/L |   | 94   | 80 - 120                    |
| Selenium               | 1.00  | 0.885  |           | mg/L |   | 88   | 80 - 120                    |
| Titanium               | 1.00  | 0.950  |           | mg/L |   | 95   | 80 - 120                    |
| Zinc                   | 1.00  | 0.919  |           | mg/L |   | 92   | 80 - 120                    |

#### Lab Sample ID: 440-245154-J-1-B MS Matrix: Water Analysis Batch: 556566

| Analysis Batch: 556566 | Sample | Sample    | Spike | MS     | MS        |      |   |      | Prep Batch: 556431<br>%Rec. |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|-----------------------------|
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits                      |
| Aluminum               | 16     |           | 1.00  | 22.9   | 4         | mg/L |   | 689  | 75 - 125                    |
| Arsenic                | 0.0092 | J         | 1.00  | 0.967  |           | mg/L |   | 96   | 75 - 125                    |
| Barium                 | 0.075  |           | 1.00  | 0.996  |           | mg/L |   | 92   | 75 - 125                    |
| Boron                  | 0.65   |           | 1.00  | 1.61   |           | mg/L |   | 96   | 75 - 125                    |
| Cadmium                | 0.0056 |           | 1.00  | 0.854  |           | mg/L |   | 85   | 75 - 125                    |
| Chromium               | 0.022  | В         | 1.00  | 0.926  |           | mg/L |   | 90   | 75 - 125                    |
| Copper                 | 0.13   |           | 1.00  | 1.12   |           | mg/L |   | 100  | 75 - 125                    |
| Magnesium              | 210    |           | 5.00  | 214    | 4         | mg/L |   | -24  | 75 - 125                    |
| Manganese              | 6.0    |           | 1.00  | 6.69   | 4         | mg/L |   | 68   | 75 - 125                    |
| Nickel                 | 0.085  |           | 1.00  | 0.939  |           | mg/L |   | 85   | 75 - 125                    |
| Selenium               | 0.075  |           | 1.00  | 0.986  |           | mg/L |   | 91   | 75 - 125                    |

## Eurofins TestAmerica, Irvine

5

8

#### Client Sample ID: Method Blank Prep Type: Total Recoverable Prep Batch: 556431

**Client Sample ID: Lab Control Sample** 

Prep Type: Total Recoverable

**Client Sample ID: Matrix Spike** 

**Prep Type: Total Recoverable** 

Lab Sample ID: 440-245154-J-1-B MS

**Matrix: Water** 

HEM

Method: 6010B - Metals (ICP) (Continued)

## Client Sample ID: Matrix Spike Prep Type: Total Recoverable Prep Batch: 556431

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total Recoverable

#### Analysis Batch: 556566 Sample Sample Spike MS MS %Rec. Analyte **Result Qualifier** Added Result Qualifier Limits Unit D %Rec Titanium 0.15 1.00 1.25 75 - 125 mg/L 111 Zinc 0.11 1.00 0.936 mg/L 82 75 - 125

## Lab Sample ID: 440-245154-J-1-C MSD Matrix: Water

| Analysis Batch: 556566 |        |           |       |        |           |      |   |      | Prep Ba  | atch: 5 | 56431 |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|---------|-------|
|                        | Sample | Sample    | Spike | MSD    | MSD       |      |   |      | %Rec.    |         | RPD   |
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD     | Limit |
| Aluminum               | 16     |           | 1.00  | 22.6   | 4         | mg/L |   | 664  | 75 - 125 | 1       | 20    |
| Arsenic                | 0.0092 | J         | 1.00  | 0.968  |           | mg/L |   | 96   | 75 - 125 | 0       | 20    |
| Barium                 | 0.075  |           | 1.00  | 0.997  |           | mg/L |   | 92   | 75 - 125 | 0       | 20    |
| Boron                  | 0.65   |           | 1.00  | 1.62   |           | mg/L |   | 97   | 75 - 125 | 0       | 20    |
| Cadmium                | 0.0056 |           | 1.00  | 0.851  |           | mg/L |   | 85   | 75 - 125 | 0       | 20    |
| Chromium               | 0.022  | В         | 1.00  | 0.923  |           | mg/L |   | 90   | 75 - 125 | 0       | 20    |
| Copper                 | 0.13   |           | 1.00  | 1.12   |           | mg/L |   | 99   | 75 - 125 | 0       | 20    |
| Magnesium              | 210    |           | 5.00  | 217    | 4         | mg/L |   | 34   | 75 - 125 | 1       | 20    |
| Manganese              | 6.0    |           | 1.00  | 6.73   | 4         | mg/L |   | 72   | 75 - 125 | 1       | 20    |
| Nickel                 | 0.085  |           | 1.00  | 0.939  |           | mg/L |   | 85   | 75 - 125 | 0       | 20    |
| Selenium               | 0.075  |           | 1.00  | 0.983  |           | mg/L |   | 91   | 75 - 125 | 0       | 20    |
| Titanium               | 0.15   |           | 1.00  | 1.29   |           | mg/L |   | 114  | 75 - 125 | 3       | 20    |
| Zinc                   | 0.11   |           | 1.00  | 0.933  |           | mg/L |   | 82   | 75 - 125 | 0       | 20    |

## Method: 1664A - HEM and SGT-HEM

| Lab Sample ID: MB 440-55639<br>Matrix: Water<br>Analysis Batch: 556472 |          | МВ        |       |     |        |       |       |          | Clie   |            | ole ID: Metho<br>Prep Type: T<br>Prep Batch: | otal/NA |
|--|----------|-----------|-------|-----|--------|-------|-------|----------|--------|------------|--|---------|
| Analyte  | Result   | Qualifier |       | RL  | 1      | MDL   | Unit  | C        | ) Р    | repared    | Analyzed                                     | Dil Fac |
| HEM  | ND       |           |       | 5.0 |        | 1.4   | mg/L  |          | 07/0   | 8/19 06:52 | 07/08/19 13:23                               | 1       |
| Lab Sample ID: LCS 440-5563<br>Matrix: Water<br>Analysis Batch: 556472 | 96/2-A   |           |       |     |        |       |       | Clier    | nt Sai |            | Lab Control<br>Prep Type: T<br>Prep Batch:   | otal/NA |
|  |          |           | Spike |     | LCS    | LCS   |       |          |        |            | %Rec.  |         |
| Analyte  |          |           | Added |     | Result | Quali | ifier | Unit     | D      | %Rec       | Limits                                       |         |
| HEM  |          |           | 20.0  |     | 19.30  |       |       | mg/L     |        | 97         | 78 - 114                                     |         |
| Lab Sample ID: LCSD 440-556<br>Matrix: Water<br>Analysis Batch: 556472 | 6396/3-A |           |       |     |        |       | С     | lient Sa | mple   |            | Control Sam<br>Prep Type: T<br>Prep Batch:   | otal/NA |
|  |          |           | Spike |     | LCSD   | LCSE  | )     |          |        |            | %Rec.  | RPD     |
| Analyte  |          |           | Added |     | Result | Quali | ifier | Unit     | D      | %Rec       | Limits RP                                    | D Limit |

20.0

19.10

mg/L

95

78 - 114

1

11

15

## **QC Sample Results**

Job ID: 440-245042-1

## Method: 2540E - Solids, Volatile and Fixed (VS)

| _<br>Lab Sample ID: MB 440-555<br>Matrix: Water | 904/1      |               |       |      |        |      |         |         |      | Clie | ent Sam    | ole ID: M<br>Prep Ty |         |     |        |
|---|------------|---------------|-------|------|--------|------|---------|---------|------|------|------------|----------------------|---------|-----|--------|
| Analysis Batch: 555904                          |            |               |       |      |        |      |         |         |      |      |            |                      |         |     |        |
|   |            | MB MB         |       |      |        |      |         |         |      |      |            |                      |         |     |        |
| Analyte   | Re         | sult Qualifie | er    | RL   |        | RL   | Unit    |         | D    | P    | repared    | Analyz               | zed     | Di  | il Fac |
| Total Volatile Solids                           |            | ND            |       | 10   |        | 10   | mg/L    |         | _    |      |            | 07/02/19             | 19:36   |     | 1      |
| _<br>Lab Sample ID: 440-245042                  | -1 DU      |               |       |      |        |      |         |         |      | Clie | ent Sam    | ole ID: 06           | 5 25 E  | BU. | тсн    |
| Matrix: Water                                   |            |               |       |      |        |      |         |         |      |      |            | Prep Ty              | pe: To  | ota | I/NA   |
| Analysis Batch: 555904                          |            |               |       |      |        |      |         |         |      |      |            |                      |         |     |        |
|   | Sample     | Sample        |       |      | DU     | DU   |         |         |      |      |            |                      |         |     | RPD    |
| Analyte   | Result     | Qualifier     |       |      | Result | Qua  | alifier | Unit    |      | D    |            |                      | RPD     | )   | Limit  |
| Total Volatile Solids                           | 7100       |               |       |      | 6840   |      |         | mg/L    |      | _    |            |                      | 3       | 3   | 20     |
| Method: 351.2 - Nitroge                         | n, Total K | Kjeldahl      |       |      |        |      |         |         |      |      |            |                      |         |     |        |
| Lab Sample ID: MB 440-556                       | 300/3-A    |               |       |      |        |      |         |         |      | Clie | ent Sam    | ole ID: M            | ethod   | B   | lank   |
| Matrix: Water                                   |            |               |       |      |        |      |         |         |      |      |            | Prep Ty              |         |     |        |
| Analysis Batch: 556894                          |            |               |       |      |        |      |         |         |      |      |            | Prep Ba              | atch:   | 556 | 6300   |
|   |            | MB MB         |       |      |        |      |         |         |      |      |            |                      |         |     |        |
| Analyte   | Re         | sult Qualifie | er    | RL   |        | MDL  | Unit    |         | D    |      | repared    | Analyz               |         | Di  | il Fac |
| Total Kjeldahl Nitrogen                         |            | ND            |       | 0.20 |        | 0.10 | mg/L    |         | _    | 07/0 | 5/19 14:00 | 07/09/19             | 20:50   |     | 1      |
| Lab Sample ID: LCS 440-55                       | 6300/4-A   |               |       |      |        |      |         | Cli     | ent  | Sar  | nple ID:   | Lab Cor              | ntrol S | San | nple   |
| Matrix: Water                                   |            |               |       |      |        |      |         |         |      |      |            | Prep Ty              | pe: To  | ota | I/NA   |
| Analysis Batch: 556894                          |            |               |       |      |        |      |         |         |      |      |            | Prep Ba              | atch:   | 556 | 6300   |
| -   |            |               | Spike |      | LCS    | LCS  | 3       |         |      |      |            | %Rec.                |         |     |        |
| Analyte   |            |               | Added |      | Result | Qua  | alifier | Unit    |      | D    | %Rec       | Limits               |         |     |        |
| Total Kjeldahl Nitrogen                         |            |               | 5.00  |      | 4.76   |      |         | mg/L    |      |      | 95         | 90 - 110             |         |     |        |
| Lab Sample ID: LCSD 440-5                       | 56300/5-A  |               |       |      |        |      | C       | lient S | Sam  | ple  | ID: Lab    | Control              | Samp    | le  | Dup    |
| Matrix: Water                                   |            |               |       |      |        |      |         |         |      |      |            | Prep Ty              | pe: To  | ota | I/NA   |
| Analysis Batch: 556894                          |            |               |       |      |        |      |         |         |      |      |            | Prep Ba              | atch:   | 556 | 6300   |
|   |            |               | Spike |      | LCSD   | LCS  | SD .    |         |      |      |            | %Rec.                |         |     | RPD    |
| Analyte   |            |               | Added |      | Result | Qua  | alifier | Unit    |      | D    | %Rec       | Limits               | RPD     | )   | Limit  |
| Total Kjeldahl Nitrogen                         |            |               | 5.00  |      | 4.99   |      |         | mg/L    |      | _    | 100        | 90 - 110             | 5       | 5   | 20     |
| _<br>Lab Sample ID: 440-245031                  | -B-3-B MS  |               |       |      |        |      |         |         |      | CI   | ient San   | nple ID: I           | Matrix  | ( S | pike   |
| Matrix: Water                                   |            |               |       |      |        |      |         |         |      |      |            | Prep Ty              | pe: To  | ota | I/NA   |
| Analysis Batch: 556894                          |            |               |       |      |        |      |         |         |      |      |            | Prep Ba              |         |     |        |
| -   | Sample     | Sample        | Spike |      | MS     | MS   |         |         |      |      |            | %Rec.                |         |     |        |
| Analyte   | Result     | Qualifier     | Added |      | Result | Qua  | alifier | Unit    |      | D    | %Rec       | Limits               |         |     |        |
| Total Kjeldahl Nitrogen                         | 0.29       |               | 5.00  |      | 4.93   |      |         | mg/L    |      | _    | 93         | 90 - 110             |         |     |        |
| Lab Sample ID: 440-245031                       | -B-3-C MS  | D             |       |      |        |      |         | Clien   | t Sa | mp   | le ID: Ma  | atrix Spil           |         | -   |        |
| Matrix: Water                                   |            |               |       |      |        |      |         |         |      |      |            | Prep Ty              |         |     |        |
| Analysis Batch: 556894                          | _          |               |       |      |        |      | _       |         |      |      |            | Prep Ba              | atch:   | 556 |        |
|   | Sample     | -             | Spike |      | MSD    |      |         |         |      | _    |            | %Rec.                |         |     | RPD    |
| Analyte   |            | Qualifier     | Added |      | Result |      | alifier | Unit    |      | D    | %Rec       | Limits               | RPD     |     | Limit  |
| Total Kjeldahl Nitrogen                         | 0.29       |               | 5.00  |      | 4.98   | _    | _       | mg/L    | _    |      | 94         | 90 - 110             | 1       | 1   | 20     |

## **QC Sample Results**

Job ID: 440-245042-1

## Method: 351.2 - Nitrogen, Total Kjeldahl (Continued)

| <br>Lab Sample ID: 440-245181              | -A-1-D MS  |                |                 |      |             |        | c     | lient Sa              | mple ID: Matr        | ix Spike   |
|--|------------|----------------|-----------------|------|-------------|--------|-------|-----------------------|----------------------|------------|
| Matrix: Water                              |            |                |                 |      |             |        |       |                       | Prep Type: 1         | Fotal/NA   |
| Analysis Batch: 556894                     |            |                |                 |      |             |        |       |                       | Prep Batch           |            |
| ·····, ·····                               | Sample     | Sample         | Spike           | MS   | MS          |        |       |                       | %Rec.                |            |
| Analyte                                    | •          | Qualifier      | Added           |      | Qualifier   | Unit   | D     | %Rec                  | Limits               |            |
| Total Kjeldahl Nitrogen                    | 0.56       |                | 5.00            | 5.32 |             | mg/L   |       | 95                    | 90 - 110             |            |
| Lab Sample ID: 440-245181                  | -Δ.1.F MS  | П              |                 |      |             | Client | Sam   |                       | latrix Spike D       | unlicato   |
| Matrix: Water                              |            | 0              |                 |      |             | onent  | oam   |                       | Prep Type: 1         |            |
|  |            |                |                 |      |             |        |       |                       |                      |            |
| Analysis Batch: 556894                     | Sampla     | Sample         | Spike           | Men  | MSD         |        |       |                       | Prep Batch:<br>%Rec. | RPD        |
| Awalista                                   |            |                | •               | -    | -           | 11     | _     | 0/ <b>D</b> = =       |                      |            |
| Analyte                                    |            | Qualifier      | Added           |      | Qualifier   | Unit   | D     |                       | Limits RF            |            |
| Total Kjeldahl Nitrogen                    | 0.56       |                | 5.00            | 5.44 |             | mg/L   |       | 98                    | 90 - 110             | 2 20       |
| Method: 353.2 - Nitroger                   | n, Nitrate | e-Nitrite      |                 |      |             |        |       |                       |                      |            |
| Lab Sample ID: MB 320-306                  | 826/15     |                |                 |      |             |        | Cli   | ent Sam               | ple ID: Metho        | d Blank    |
| Matrix: Water                              |            |                |                 |      |             |        |       |                       | Prep Type:           |            |
| Analysis Batch: 306826                     |            |                |                 |      |             |        |       |                       |                      |            |
|  |            | МВ МВ          |                 |      |             |        |       |                       |                      |            |
| Analyte                                    | Re         | sult Qualifier | RL              |      | MDL Unit    |        | D     | Prepared              | Analyzed             | Dil Fac    |
| Nitrate Nitrite as N                       |            | ND Quanner     | 0.050           |      | 0031 mg/L   |        |       | Tepareu               |                      |            |
|  |            | ND             | 0.050           | 0.0  | JUST IIIg/L |        |       |                       | 07/10/19 10.30       | , 1        |
| Lab Sample ID: LCS 320-30                  | 6826/16    |                |                 |      |             | Clie   | nt Sa | mple ID               | : Lab Control        | Sample     |
| Matrix: Water                              |            |                |                 |      |             | -      |       |                       | Prep Type: 1         |            |
| Analysis Batch: 306826                     |            |                |                 |      |             |        |       |                       |                      |            |
| Analysis Datch. 300020                     |            |                | Spike           | LCS  | LCS         |        |       |                       | %Rec.                |            |
| Analyte                                    |            |                | Added           | -    | Qualifier   | Unit   | D     | %Rec                  | Limits               |            |
| Nitrate Nitrite as N                       |            |                | 1.00            | 1.02 | Quaimer     |        |       | 102                   | 90 - 110             |            |
| -  |            |                | 1.00            | 1.02 |             | mg/L   |       | 102                   | 90-110               |            |
| Lab Sample ID: 440-244710                  | -A_1 MS    |                |                 |      |             |        | 6     | liont Sa              | mple ID: Matr        | iv Sniko   |
|  | -A-1 WIS   |                |                 |      |             |        |       | ment Sa               |                      |            |
| Matrix: Water                              |            |                |                 |      |             |        |       |                       | Prep Type:           | l otal/INA |
| Analysis Batch: 306826                     | 0          | 0              | 0               |      |             |        |       |                       | 0/ <b>D</b>          |            |
|  |            | Sample         | Spike           | -    | MS          |        | _     |                       | %Rec.                |            |
| Analyte                                    |            | Qualifier      | Added           |      | Qualifier   | Unit   | D     |                       | Limits               |            |
| Nitrate Nitrite as N                       | 0.19       |                | 1.00            | 1.23 |             | mg/L   |       | 104                   | 90 - 110             |            |
| Lab Sample ID: 440-244710                  | -A-1 MSD   |                |                 |      |             | Client | Sam   | nle ID <sup>.</sup> M | latrix Spike D       | unlicate   |
| Matrix: Water                              |            |                |                 |      |             | • none | oun   |                       | Prep Type: 1         |            |
|  |            |                |                 |      |             |        |       |                       | гтер туре.           |            |
| Analysis Batch: 306826                     | Sampla     | Somelo         | Spiko           | Men  | MED         |        |       |                       | % Baa                | RPD        |
|  | -          | Sample         | Spike           |      | MSD         |        | _     | ~-                    | %Rec.                |            |
| Analyte                                    |            | Qualifier      | Added           |      | Qualifier   | Unit   | D     |                       | Limits RF            |            |
| Nitrate Nitrite as N                       | 0.19       |                | 1.00            | 1.19 |             | mg/L   |       | 100                   | 90 - 110             | 4 20       |
| Method: 365.3 - Phosph                     | orus, To   | tal            |                 |      |             |        |       |                       |                      |            |
| Lab Sample ID: MB 440-556<br>Matrix: Water | 226/1-A    |                |                 |      |             |        | Cli   | ent Sam               | ple ID: Metho        |            |
|  |            |                |                 |      |             |        |       |                       | Prep Type: 1         |            |
| Analysis Batch: 556268                     |            |                |                 |      |             |        |       |                       | Prep Batch           | 556226     |
|  |            | MB MB          |                 |      |             |        |       |                       |                      |            |
|  |            |                |                 |      |             |        |       |                       |                      |            |
| Analyte<br>Phosphorus, Total               | Re         | ND Qualifier   | <b>RL</b> 0.050 |      | MDL Unit    |        |       | Prepared              | Analyzed             | Dil Fac    |

Job ID: 440-245042-1

Method: 365.3 - Phosphorus, Total (Continued)

| Lab Sample ID: LCS 440-5  | 56226/2-A   |                          |       |                        |                 | Clie         | nt Sar   | nple ID      | : Lab Cor  | ntrol Sa  | mple   |
|---|---|--------------------------|-------|------------------------|-----------------|--------------|----------|--------------|--|-----------|--------|
| Matrix: Water   |   |                          |       |                        |                 |              |          | -            | Prep Ty  |           |        |
| Analysis Batch: 556268  |   |                          |       |                        |                 |              |          |              | Prep Ba  | atch: 55  | 56226  |
|   |   |                          | Spike | LCS                    | LCS             |              |          |              | %Rec.  |           |        |
| Analyte   |   |                          | Added | Result                 | Qualifier       | Unit         | D        | %Rec         | Limits   |           |        |
| Phosphorus, Total   |   |                          | 0.501 | 0.508                  |                 | mg/L         |          | 102          | 80 - 120   |           |        |
| Lab Sample ID: 440-24500  | 5-B-1-B MS  |                          |       |                        |                 |              | CI       | ient Sa      | mple ID: I   | Matrix \$ | Spike  |
| Matrix: Water   |   |                          |       |                        |                 |              |          |              | Prep Ty  | pe: Tot   | al/N/  |
| Analysis Batch: 556268  |   |                          |       |                        |                 |              |          |              | Prep Ba  | atch: 55  | 5622   |
|   | Sample  | Sample                   | Spike | MS                     | MS              |              |          |              | %Rec.  |           |        |
| Analyte   |   | Qualifier                | Added | Result                 | Qualifier       | Unit         | D        | %Rec         | Limits   |           |        |
| Phosphorus, Total   | 0.13  | F1                       | 0.501 | 0.170                  | F1              | mg/L         |          | 8            | 75 - 125   |           |        |
| Lab Sample ID: 440-24500  | 5-B-1-C MS  | D                        |       |                        |                 | Client       | Samp     | le ID: N     | latrix Spil  | ke Dup    | licate |
| Matrix: Water   |   |                          |       |                        |                 |              |          |              | Prep Ty  | pe: Tot   | al/N/  |
| Analysis Batch: 556268  |   |                          |       |                        |                 |              |          |              | Prep Ba  | atch: 55  | 56226  |
|   | Sample  | •                        | Spike | MSD                    | MSD             |              |          |              | %Rec.  |           | RPI    |
| Analyte   |   | Qualifier                | Added |                        | Qualifier       | Unit         | D        | %Rec         | Limits   | RPD       | Limi   |
| Phosphorus, Total   | 0.13  | F1                       | 0.501 | 0.193                  | F1              | mg/L         |          | 12           | 75 - 125   | 12        | 20     |
| Lab Sample ID: MB 440-55  | 6299/1-A  |                          |       |                        |                 |              | Clie     | nt Sam       | ple ID: M  | ethod E   | Blan   |
| Matrix: Water   |   |                          |       |                        |                 |              |          |              | Prep Ty  | pe: Tot   | al/N/  |
| Analysis Batch: 556353  |   |                          |       |                        |                 |              |          |              | Prep Ba  | atch: 55  | 5629   |
|   |   | MB MB                    |       |                        |                 |              |          |              |  |           |        |
| Analyte   | Re  | sult Qualifier           | R     |                        | MDL Unit        |              |          | repared      | Analyz   |           | Dil Fa |
| Phosphorus, Total   |   | ND                       | 0.05  | 0 0                    | ).025 mg/L      |              | 07/0     | 5/19 18:0    | 5 07/06/19   | 13:31     |        |
| Lab Sample ID: LCS 440-5  | 56299/2-A   |                          |       |                        |                 | Clie         | ent Sar  | nple ID      | : Lab Cor  |           |        |
| Matrix: Water   |   |                          |       |                        |                 |              |          |              | Prep Ty  |           |        |
| Analysis Batch: 556353  |   |                          |       |                        |                 |              |          |              | Prep Ba  | atch: 55  | 5629   |
|   |   |                          | Spike | -                      | LCS             |              | _        |              | %Rec.  |           |        |
| Analyte   |   |                          | Added |                        | Qualifier       | Unit         | D        |              | Limits   |           |        |
| Phosphorus, Total   |   |                          | 0.501 | 0.502                  |                 | mg/L         |          | 100          | 80 - 120   |           |        |
|   |   |                          |       |                        |                 |              | CI       | ient Sa      | mple ID: I   |           |        |
|   | 0-D-1-D 1VI3                                      |                          |       |                        |                 |              |          |              | Prep Ty  | no: Tot   |        |
| Matrix: Water   | 0-D-1-D 1413                                      |                          |       |                        |                 |              |          |              |  |           |        |
| Lab Sample ID: 440-24500<br>Matrix: Water<br>Analysis Batch: 556353   |   |                          |       |                        |                 |              |          |              | Prep Ba  |           |        |
| Matrix: Water<br>Analysis Batch: 556353   | Sample  | Sample                   | Spike |                        | MS              |              |          |              | Prep Ba<br>%Rec.   |           |        |
| Matrix: Water<br>Analysis Batch: 556353<br>Analyte  | Sample<br>Result                                  |                          | Added | Result                 | MS<br>Qualifier | Unit         | D        | %Rec         | Prep Ba<br>%Rec.<br>Limits   |           |        |
| Matrix: Water<br>Analysis Batch: 556353<br>Analyte  | Sample  | Sample                   |       |                        |                 | Unit<br>mg/L | <u>D</u> | % <b>Rec</b> | Prep Ba<br>%Rec.   |           |        |
| Matrix: Water<br>Analysis Batch: 556353<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: 440-24500                   | Sample<br>Result<br>0.065                         | Sample<br>Qualifier      | Added | Result                 |                 | mg/L         |          | 103          | Prep Ba<br>%Rec.<br>Limits<br>75 - 125                                     | tch: 55   | licate |
| Matrix: Water<br>Analysis Batch: 556353<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: 440-245003<br>Matrix: Water | Sample<br>Result<br>0.065                         | Sample<br>Qualifier      | Added | Result                 |                 | mg/L         |          | 103          | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>Atrix Spil<br>Prep Ty            | tch: 55   | licate |
| Matrix: Water<br>Analysis Batch: 556353<br>Analyte<br>Phosphorus, Total   | Sample<br>Result<br>0.065<br>8-B-1-C MS           | Sample<br>Qualifier<br>D | Added | Result<br>0.580        | Qualifier       | mg/L         |          | 103          | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>Atrix Spil<br>Prep Ty<br>Prep Ba | tch: 55   | 56299  |
| Matrix: Water<br>Analysis Batch: 556353<br>Analyte<br>Phosphorus, Total<br>Lab Sample ID: 440-245003<br>Matrix: Water | Sample<br>Result<br>0.065<br>8-B-1-C MS<br>Sample | Sample<br>Qualifier<br>D | Added | Result<br>0.580<br>MSD |                 | mg/L         | Samp     | 103          | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>Atrix Spil<br>Prep Ty            | tch: 55   | licate |

Job ID: 440-245042-1

| Lab Sample ID: MB 680-5772   | 56/1-A     |             |                 |       |                 |        |                |        |      | Clie  | ent Samp             | ole ID: Metl              | nod       | Blan   |
|--|------------|-------------|-----------------|-------|-----------------|--------|----------------|--------|------|-------|----------------------|---------------------------|-----------|--------|
| Matrix: Water  |            |             |                 |       |                 |        |                |        |      |       |                      | Prep Type                 |           |        |
| Analysis Batch: 577344   |            |             |                 |       |                 |        |                |        |      |       |                      | Prep Batc                 |           |        |
| -  |            | MB          | MB              |       |                 |        |                |        |      |       |                      |                           |           |        |
| Analyte  | Re         | sult        | Qualifier       |       | RL              | r      | /IDL Un        | it     | D    | Ρ     | repared              | Analyzed                  |           | Dil Fa |
| Phenolics, Total Recoverable   |            | ND          |                 | 0     | .050            | 0      | .025 mg        | /L     |      | 07/0  | 9/19 12:53           | 07/09/19 17               | :30       |        |
| Lab Sample ID: LCS 680-577   | 256/2-4    |             |                 |       |                 |        |                | С      | lien | t Sar | mple ID <sup>.</sup> | Lab Contr                 | ol Sa     | ample  |
| Matrix: Water  |            |             |                 |       |                 |        |                | •      |      |       |                      | Prep Type                 |           |        |
| Analysis Batch: 577344   |            |             |                 |       |                 |        |                |        |      |       |                      | Prep Batc                 |           |        |
|  |            |             |                 | Spike |                 | LCS    | LCS            |        |      |       |                      | %Rec.                     |           |        |
| Analyte  |            |             |                 | Added |                 | Result | Qualifie       | r Unit |      | D     | %Rec                 | Limits                    |           |        |
| Phenolics, Total Recoverable   |            |             |                 | 0.100 |                 | 0.114  |                | mg/L   |      |       | 114                  | 75 - 125                  |           |        |
| Lab Sample ID: 440-245195-J  | -1-B MS    |             |                 |       |                 |        |                |        |      | CI    | ient Sam             | nple ID: Ma               | trix      | Spik   |
| Matrix: Water  |            |             |                 |       |                 |        |                |        |      |       |                      | Prep Type                 |           |        |
| Analysis Batch: 577344   |            |             |                 |       |                 |        |                |        |      |       |                      | Prep Batc                 |           |        |
|  | Sample     | Sam         | nple            | Spike |                 | MS     | MS             |        |      |       |                      | %Rec.                     |           |        |
| Analyte  | Result     | Qua         | lifier          | Added |                 | Result | Qualifie       | r Unit |      | D     | %Rec                 | Limits                    |           |        |
| Phenolics, Total Recoverable   | 0.025      | J           |                 | 0.100 |                 | 0.103  |                | mg/L   |      |       | 78                   | 75 - 125                  |           |        |
| Lab Sample ID: 440-245195-J  | -1-C MS    | D           |                 |       |                 |        |                | Clie   | nt S | amp   | le ID: Ma            | atrix Spike               | Dup       | licat  |
| Matrix: Water  |            |             |                 |       |                 |        |                | •      |      | amp   |                      | Prep Type                 |           |        |
| Analysis Batch: 577344   |            |             |                 |       |                 |        |                |        |      |       |                      | Prep Batc                 |           |        |
| ·····  | Sample     | Sam         | nple            | Spike |                 | MSD    | MSD            |        |      |       |                      | %Rec.                     |           | RP     |
| Analyte  | Result     | Qua         | lifier          | Added |                 | Result | Qualifie       | r Unit |      | D     | %Rec                 | Limits                    | RPD       | Lim    |
| Phenolics, Total Recoverable   | 0.025      | J           |                 | 0.100 |                 | 0.114  |                | mg/L   |      |       | 89                   | 75 - 125                  | 10        | 3      |
| lethod: ASTM D5057-90  | - Speci    | fic         | Gravity         | and B | ulk             | Dens   | ity (S         | creeni | ng)  | )     |                      |                           |           |        |
| Lab Sample ID: 180-92006-A-  | 1 DU       |             |                 |       |                 |        |                |        |      |       | Client S             | Sample ID:                | Dup       | licat  |
| Matrix: Water  |            |             |                 |       |                 |        |                |        |      |       |                      | Prep Type                 |           |        |
| Analysis Batch: 284432   |            |             |                 |       |                 |        |                |        |      |       |                      |                           |           |        |
| -  | Sample     |             | •               |       |                 | DU     | DU             |        |      |       |                      |                           |           | RP     |
| Analyte  | Result     | Qua         | lifier          |       |                 | Result | Qualifie       | r Unit |      | D     |                      |                           | RPD       | Lim    |
| Specific Gravity   | 1.0        |             |                 |       |                 | 0.986  |                | No Ur  | nit  |       |                      |                           | 2         | 2      |
|  | la Tota    | al          |                 |       |                 |        |                |        |      |       |                      |                           |           |        |
| iethod: SNI 2540B - Solid  | 15, 1018   |             |                 |       |                 |        |                |        |      |       |                      |                           |           |        |
|  |            |             |                 |       |                 |        |                |        |      | Clie  | ent Samp             | ole ID: Metl              | 10d       | Bian   |
| lethod: SM 2540B - Solic<br>Lab Sample ID: MB 440-5559<br>Matrix: Water  |            |             |                 |       |                 |        |                |        |      | Clie  |                      | ole ID: Meti<br>Prep Type |           |        |
| Lab Sample ID: MB 440-5559<br>Matrix: Water  |            |             |                 |       |                 |        |                |        |      | Clie  |                      | ole ID: Metl<br>Prep Type |           |        |
| Lab Sample ID: MB 440-5559<br>Matrix: Water  |            | мв          | МВ              |       |                 |        |                |        |      | Clie  |                      |                           |           |        |
| Lab Sample ID: MB 440-5559<br>Matrix: Water<br>Analysis Batch: 555974<br><sup>Analyte</sup>  | 74/1       | MB<br>esult | MB<br>Qualifier |       | RL              |        | RL Un          |        | D    |       |                      | Prep Type<br>Analyzed     | : Tot     | al/N   |
| Lab Sample ID: MB 440-5559<br>Matrix: Water<br>Analysis Batch: 555974<br><sup>Analyte</sup>  | 74/1       | МВ          |                 |       | <b>RL</b><br>10 |        | RL Un<br>10 mg |        | D    |       |                      | Prep Type                 | : Tot     |        |
| Lab Sample ID: MB 440-5559<br>Matrix: Water<br>Analysis Batch: 555974<br>Analyte<br>Fotal Solids<br>Lab Sample ID: LCS 440-555                   | 74/1<br>Re | MB<br>esult |                 |       |                 |        |                | /L     |      | P     | repared<br>mple ID:  | Analyzed<br>07/02/19 19   | : Tot<br> | ampl   |
| Lab Sample ID: MB 440-5559<br>Matrix: Water<br>Analysis Batch: 555974<br>Analyte<br>Total Solids<br>Lab Sample ID: LCS 440-5555<br>Matrix: Water | 74/1<br>Re | MB<br>esult |                 |       |                 |        |                | /L     |      | P     | repared<br>mple ID:  | Analyzed                  | : Tot<br> | al/N   |
| Lab Sample ID: MB 440-5559   | 74/1<br>Re | MB<br>esult |                 | Spike |                 | LCS    | 10 mg          | /L     |      | P     | repared<br>mple ID:  | Analyzed<br>07/02/19 19   | : Tot<br> | al/N   |

Job ID: 440-245042-1

Method: SM 2540B - Solids, Total (Continued)

| _<br>Lab Sample ID: 440-245042<br>Matrix: Water | -1 DU      |                |        |                  |          | Client Sam       | ple ID: 06 25 B<br>Prep Type: To |         |
|---|------------|----------------|--------|------------------|----------|------------------|----------------------------------|---------|
| Analysis Batch: 555974                          |            |                |        |                  |          |                  |                                  |         |
|   | Sample     | Sample         |        | DU DU            |          |                  |                                  | RPD     |
| Analyte   |            | Qualifier      |        | Result Qualifier | Unit     | D                | RPD                              | Limit   |
| Total Solids                                    | 10000      |                |        | 9800             | mg/L     |                  | 2                                | 10      |
| Method: SM 4500 CN E                            | - Cyanide  | e, Total       |        |                  |          |                  |                                  |         |
| Lab Sample ID: MB 440-556                       | 6015/1-A   |                |        |                  |          | Client Sam       | ple ID: Method                   | Blank   |
| Matrix: Water                                   |            |                |        |                  |          |                  | Prep Type: To                    |         |
| Analysis Batch: 556040                          |            |                |        |                  |          |                  | Prep Batch: 5                    |         |
|   |            | MB MB          |        |                  |          |                  |                                  |         |
| Analyte   | Re         | sult Qualifier | RI     | . MDL Unit       | D        | Prepared         | Analyzed                         | Dil Fac |
| Cyanide, Total                                  |            | ND             | 0.02   | 5 0.013 mg/L     |          | 07/03/19 10:24   | 4 07/03/19 12:39                 | 1       |
| Lab Samala ID: LCS 440 FF                       | CO4 E 12 A |                |        |                  | Client   | t Comple ID      | Lab Control S                    | omela   |
| Lab Sample ID: LCS 440-55                       | 0015/2-A   |                |        |                  | Clien    | t Sample ID      | Lab Control S                    |         |
| Matrix: Water                                   |            |                |        |                  |          |                  | Prep Type: To                    |         |
| Analysis Batch: 556040                          |            |                | Omilia |                  |          |                  | Prep Batch: 5                    | 56015   |
| Analysis  |            |                | Spike  | LCS LCS          | 11       |                  | %Rec.                            |         |
| Analyte   |            |                | Added  | Result Qualifier | Unit     | _ D %Rec         | Limits                           |         |
| Cyanide, Total                                  |            |                | 0.200  | 0.190            | mg/L     | 95               | 80 - 120                         |         |
| Lab Sample ID: 440-245069                       | -B-1-B MS  |                |        |                  |          | <b>Client Sa</b> | mple ID: Matrix                  | Spike   |
| Matrix: Water                                   |            |                |        |                  |          |                  | Prep Type: To                    | tal/NA  |
| Analysis Batch: 556040                          |            |                |        |                  |          |                  | Prep Batch: 5                    | 556015  |
| -   | Sample     | Sample         | Spike  | MS MS            |          |                  | %Rec.                            |         |
| Analyte   | Result     | Qualifier      | Added  | Result Qualifier | Unit     | D %Rec           | Limits                           |         |
| Cyanide, Total                                  | ND         |                | 0.200  | 0.202            | mg/L     | 101              | 75 - 125                         |         |
| Lab Sample ID: 440-245069                       | -B-1-C MS  | D              |        |                  | Client S | ample ID: M      | atrix Spike Du                   | olicate |
| Matrix: Water                                   |            | -              |        |                  |          |                  | Prep Type: To                    |         |
| Analysis Batch: 556040                          |            |                |        |                  |          |                  | Prep Batch: 5                    |         |
| ,   | Sample     | Sample         | Spike  | MSD MSD          |          |                  | %Rec.                            | RPD     |
| Analyte   | Result     | Qualifier      | Added  | Result Qualifier | Unit     | D %Rec           | Limits RPD                       | Limi    |
| Cyanide, Total                                  | ND         |                | 0.200  | 0.183            | mg/L     | 91               | 75_125 10                        | 20      |
| Lab Sample ID: MB 440-556                       | 101/1 1    |                |        |                  |          | Client Sam       | ple ID: Method                   | Plan    |
|   | 121/1-A    |                |        |                  |          | Chem Sam         | •                                |         |
| Matrix: Water                                   |            |                |        |                  |          |                  | Prep Type: To                    |         |
| Analysis Batch: 556276                          |            | MB MB          |        |                  |          |                  | Prep Batch: 5                    | 5012    |
| Analyte   | Po         | sult Qualifier | RI     | _ MDL Unit       | D        | Prepared         | Analyzed                         | Dil Fac |
| Cyanide, Total                                  |            |                | 0.02   |                  |          | 07/03/19 19:20   | •                                |         |
|   |            | ND             | 0.02   | 0.010 mg/E       |          | 07/03/13 13.20   | 0 01/03/10 10:00                 |         |
| Lab Sample ID: LCS 440-55                       | 6121/2-A   |                |        |                  | Clien    | t Sample ID:     | Lab Control S                    | ample   |
| Matrix: Water                                   |            |                |        |                  |          | •                | Prep Type: To                    |         |
| Analysis Batch: 556276                          |            |                |        |                  |          |                  | Prep Batch: 5                    |         |
| •   |            |                | Spike  | LCS LCS          |          |                  | %Rec.                            |         |
| Analyte   |            |                | Added  | Result Qualifier | Unit     | D %Rec           | Limits                           |         |
|   |            |                |        |                  |          |                  |                                  |         |

Job ID: 440-245042-1

# Method: SM 4500 CN E - Cyanide, Total (Continued)

| Lab Sample ID: 440-244677-  | A-6-B MS  | i.  |                                |      |                               |        |      |                        |       | CI      | ient Sam   | -  |              |   |
|---|---|---|--------------------------------|------|-------------------------------|--------|------|------------------------|-------|---------|--|--|--------------|---|
| Matrix: Water   |   |   |                                |      |                               |        |      |                        |       |         |  | Prep Ty  |              |   |
| Analysis Batch: 556276  | <b>.</b> .  | <b>.</b> .  |                                |      |                               |        |      |                        |       |         |  | Prep Ba  | atch: 5      | 56121                                       |
| • • •   | -   | Sample  | Spike                          |      |                               | MS     |      |                        |       | _       | ~-   | %Rec.  |              |   |
| Analyte   |   | Qualifier   | Added                          |      | Result                        | Qualit | ier  | Unit                   |       | D       | %Rec   | Limits   |              |   |
| Cyanide, Total  | ND  |   | 0.200                          |      | 0.208                         |        |      | mg/L                   |       |         | 104  | 75 - 125   |              |   |
| Lab Sample ID: 440-244677-<br>Matrix: Water   | A-6-C MS  | D   |                                |      |                               |        |      | Client                 | Sar   | np      | le ID: Ma  | itrix Spil<br>Prep Ty  |              |   |
| Analysis Batch: 556276  |   |   |                                |      |                               |        |      |                        |       |         |  | Prep Ba  |              |   |
|   | Sample  | Sample  | Spike                          |      | MSD                           | MSD    |      |                        |       |         |  | %Rec.  |              | RPD   |
| Analyte   |   | Qualifier   | Added                          |      | Result                        | Qualif | ier  | Unit                   |       | D       | %Rec   | Limits   | RPD          | Limi  |
| Cyanide, Total  | ND  |   | 0.200                          |      | 0.205                         |        |      | mg/L                   |       | —       | 102  | 75 - 125   | 2            | 20  |
| lethod: SM 4500 NH3 D   | - Ammo  | onia  |                                |      |                               |        |      |                        |       |         |  |  |              |   |
| Lab Sample ID: MB 440-556   | 152/2-A   |   |                                |      |                               |        |      |                        | c     | Clie    | nt Samp  | ole ID: M  | ethod        | Blank                                       |
| Matrix: Water   |   |   |                                |      |                               |        |      |                        |       |         | -  | Prep Ty  | pe: To       | tal/NA                                      |
| Analysis Batch: 556165  |   |   |                                |      |                               |        |      |                        |       |         |  | Prep Ba  |              |   |
|   |   | MB MB   |                                |      |                               |        |      |                        |       |         |  |  |              |   |
| Analyte   | Re  | esult Qualifier   |                                | RL   |                               | MDL U  |      |                        | D     |         | repared  | Analyz   |              | Dil Fac                                     |
| Ammonia (as N)  |   | ND  |                                | 0.50 |                               | 0.10 m | ng/L |                        | _ 0   | 07/0    | 5/19 04:00                                       | 07/05/19   | 06:00        | 1   |
| Ammonia as NH3  |   | ND  |                                | 0.60 |                               | 0.12 m | ng/L |                        | 0     | )7/0    | 5/19 04:00                                       | 07/05/19   | 06:00        | 1   |
| Lab Sample ID: LCS 440-55   | 6152/1-A  |   |                                |      |                               |        |      | Clie                   | ent S | Sar     | nple ID:   | Lab Cor  | ntrol S      | ample                                       |
| Matrix: Water   |   |   |                                |      |                               |        |      |                        |       |         | -  | Prep Ty  |              |   |
| Analysis Batch: 556165  |   |   |                                |      |                               |        |      |                        |       |         |  | Prep Ba  |              |   |
| · ·····, · · · · · · · · · · · · · · ·  |   |   | Spike                          |      | LCS                           | LCS    |      |                        |       |         |  | %Rec.  |              |   |
| Analyte   |   |   | Added                          |      | Result                        | Qualif | ier  | Unit                   |       | D       | %Rec   | Limits   |              |   |
| Ammonia (as N)  |   |   | 2.50                           |      | 2.30                          |        |      | mg/L                   |       | _       | 92   | 85 - 115   |              |   |
| Ammonia as NH3  |   |   | 3.04                           |      | 2.80                          |        |      | mg/L                   |       |         | 92   | 85 - 115   |              |   |
| Lab Sample ID: MRL 440-55   | 6152/3-A  |   |                                |      |                               |        |      | Clie                   | ent S | Sar     | nple ID:   | Lab Cor  | ntrol S      | ample                                       |
| Matrix: Water   |   |   |                                |      |                               |        |      |                        |       |         | -  | Prep Ty  |              |   |
| Analysis Batch: 556165  |   |   |                                |      |                               |        |      |                        |       |         |  | Prep Ba  |              |   |
| · · · · <b>,</b> · · · · · · · · · · · · · · · · · · ·  |   |   | Spike                          |      | MRL                           | MRL    |      |                        |       |         |  | %Rec.  |              |   |
| Analyte   |   |   | Added                          |      | Result                        | Qualif | ier  | Unit                   |       | D       | %Rec   | Limits   |              |   |
| Ammonia (as N)  |   |   | 0.500                          |      | 0.494                         | J      |      | mg/L                   |       | _       | 99   | 10 - 200   |              |   |
| Ammonia as NH3  |   |   | 0.607                          |      | 0.599                         | J      |      | mg/L                   |       |         | 99   | 10 - 200   |              |   |
|   |   |   |                                |      |                               |        |      |                        |       | CI      | ient Sarr  | -  |              |   |
|   | A-1-B MS  |   |                                |      |                               |        |      |                        |       |         |  |  |              |   |
| Matrix: Water   | -A-1-B MS   |   |                                |      |                               |        |      |                        |       |         |  | Prep Ty  |              |   |
| Lab Sample ID: 440-245045-<br>Matrix: Water<br>Analysis Batch: 556165   |   |   | Sniko                          |      | Ме                            | MS     |      |                        |       |         |  | Prep Ba  |              |   |
| Matrix: Water<br>Analysis Batch: 556165   | Sample  | Sample  | Spike                          |      | MS                            | -      | ior  | Unit                   |       | п       |  | Prep Ba<br>%Rec.   |              |   |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte  | Sample<br>Result  | Sample<br>Qualifier                                       | Added                          |      | Result                        | -      | ier  | Unit                   |       | D       | %Rec   | Prep Ba<br>%Rec.<br>Limits   |              |   |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte<br>Ammonia (as N)  | Sample  | Sample<br>Qualifier<br>J                                  | •                              |      | -                             | -      | ier  | Unit<br>mg/L<br>mg/L   |       | D       |  | Prep Ba<br>%Rec.   |              |   |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte<br>Ammonia (as N)<br>Ammonia as NH3  | Sample<br>Result<br>0.25<br>0.30                        | Sample<br>Qualifier<br>J<br>J                             | <b>Added</b><br>2.50           |      | Result<br>2.68                | -      | ier  | mg/L<br>mg/L           |       | _       | <b>%Rec</b><br>97<br>97                          | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>75 - 125   | atch: 5      | 556152                                      |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte<br>Ammonia (as N)<br>Ammonia as NH3<br>Lab Sample ID: 440-245045-  | Sample<br>Result<br>0.25<br>0.30                        | Sample<br>Qualifier<br>J<br>J                             | <b>Added</b><br>2.50           |      | Result<br>2.68                | -      | ier  | mg/L<br>mg/L           | Sar   | _       | <mark>%Rec</mark><br>97<br>97                    | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>75 - 125<br>rtrix Spil                                 | e Duj        | 556152                                      |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte<br>Ammonia (as N)<br>Ammonia as NH3<br>Lab Sample ID: 440-245045-<br>Matrix: Water                           | Sample<br>Result<br>0.25<br>0.30                        | Sample<br>Qualifier<br>J<br>J                             | <b>Added</b><br>2.50           |      | Result<br>2.68                | -      | ier  | mg/L<br>mg/L           | Sar   | _       | <mark>%Rec</mark><br>97<br>97                    | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>75 - 125<br>htrix Spil<br>Prep Ty                      | ke Duppe: To | olicate                                     |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte<br>Ammonia (as N)<br>Ammonia as NH3<br>Lab Sample ID: 440-245045-  | Sample<br>Result<br>0.25<br>0.30<br>•A-1-C MS           | Sample<br>Qualifier<br>J<br>J                             | Added<br>2.50<br>3.04          |      | <b>Result</b><br>2.68<br>3.25 | Qualif | ier_ | mg/L<br>mg/L           | Sar   | _       | <mark>%Rec</mark><br>97<br>97                    | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>75 - 125<br>htrix Spil<br>Prep Ty<br>Prep Ba           | ke Duppe: To | olicate<br>otal/NA                          |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte<br>Ammonia (as N)<br>Ammonia as NH3<br>Lab Sample ID: 440-245045-<br>Matrix: Water<br>Analysis Batch: 556165 | Sample<br>Result<br>0.25<br>0.30<br>•A-1-C MS<br>Sample | Sample<br>Qualifier<br>J<br>J<br>D<br>Sample              | Added<br>2.50<br>3.04<br>Spike |      | Result<br>2.68<br>3.25<br>MSD | Qualif |      | mg/L<br>mg/L<br>Client | Sar   | -<br>np | <mark>%Rec</mark><br>97<br>97<br>97<br>Ie ID: Ma | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>75 - 125<br>htrix Spil<br>Prep Typ<br>Prep Ba<br>%Rec. | etch: 5      | olicate<br>tal/NA<br>556152<br>RPD          |
| Matrix: Water<br>Analysis Batch: 556165<br>Analyte<br>Ammonia (as N)<br>Ammonia as NH3<br>Lab Sample ID: 440-245045-<br>Matrix: Water                           | Sample<br>Result<br>0.25<br>0.30<br>•A-1-C MS<br>Sample | Sample<br>Qualifier<br>J<br>J<br>D<br>Sample<br>Qualifier | Added<br>2.50<br>3.04          |      | <b>Result</b><br>2.68<br>3.25 | Qualif |      | mg/L<br>mg/L           | Sar   | _       | <u>%Rec</u><br>97<br>97<br>Ie ID: Ma<br>%Rec     | Prep Ba<br>%Rec.<br>Limits<br>75 - 125<br>75 - 125<br>htrix Spil<br>Prep Ty<br>Prep Ba           | ke Duppe: To | olicate<br>tal/NA<br>556152<br>RPC<br>Limit |

Job ID: 440-245042-1

Method: SM 4500 NH3 D - Ammonia (Continued)

| Lab Sample ID: 440-245045   | 5-A-1-A DU   |                         |                 |                 |      |   | Client                | Sample ID: Dup                              | olicate               |
|---|--------------|-------------------------|-----------------|-----------------|------|---|-----------------------|---|-----------------------|
| Matrix: Water   |              |                         |                 |                 |      |   |                       | Prep Type: To                               | tal/NA                |
| Analysis Batch: 556165  |              |                         |                 |                 |      |   |                       | Prep Batch: 5                               | 56152                 |
|   | Sample       | Sample                  | DU              | DU              |      |   |                       |   | RPD                   |
| Analyte   | Result       | Qualifier               | Result          | Qualifie        | Unit | I | D                     | RPD   | Limit                 |
| Ammonia (as N)  | 0.25         | J                       | 0.251           | J               | mg/L |   |                       | 0   | 15                    |
| Ammonia as NH3  | 0.30         | J                       | 0.305           | J               | mg/L |   |                       | 0   | 15                    |
| Lab Sample ID: MB 440-556   |              |                         |                 |                 |      | C | lient Sam             | ple ID: Method<br>Prep Type: To             |                       |
| Lab Sample ID: MB 440-556<br>Matrix: Water  |              | MB MB                   |                 |                 |      | C | lient Sam             | •   |                       |
| Lab Sample ID: MB 440-556<br>Matrix: Water<br>Analysis Batch: 556931  | 6931/3       | MB MB<br>sult Qualifier | RL              | MDL Un          | t    |   | lient Sam<br>Prepared | Prep Type: To                               |                       |
| Lab Sample ID: MB 440-556<br>Matrix: Water<br>Analysis Batch: 556931<br><sup>Analyte</sup>  | 6931/3       |                         | <b>RL</b><br>20 | MDL Un<br>10 mg | -    |   |                       | Prep Type: To                               | tal/NA                |
| Lab Sample ID: MB 440-556<br>Matrix: Water<br>Analysis Batch: 556931<br>Analyte<br>Chemical Oxygen Demand   | 6931/3<br>Re | sult Qualifier          |                 |                 | L    | D | Prepared              | Prep Type: To<br>Analyzed<br>07/10/19 16:45 | tal/NA<br>Dil Fac     |
| Iethod: SM 5220D - CO         Lab Sample ID: MB 440-556         Matrix: Water         Analysis Batch: 556931         Analyte         Chemical Oxygen Demand         Lab Sample ID: LCS 440-55         Matrix: Water | 6931/3<br>Re | sult Qualifier          |                 |                 | L    | D | Prepared              | Prep Type: To<br>Analyzed                   | Dil Fac<br>1<br>ample |

|                        | Spike | LCS    | LCS       |      |   |      | %Rec.    |  |
|------------------------|-------|--------|-----------|------|---|------|----------|--|
| Analyte                | Added | Result | Qualifier | Unit | D | %Rec | Limits   |  |
| Chemical Oxygen Demand | 200   | 190    |           | mg/L |   | 95   | 90 - 110 |  |

### Lab Sample ID: 440-245408-A-1 MS Matrix: Water

| Analysis Batch: 556931 |        |           |       |        |           |      |   |      |          | - |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|---|
| -                      | Sample | Sample    | Spike | MS     | MS        |      |   |      | %Rec.    |   |
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   |   |
| Chemical Oxygen Demand | 79     |           | 200   | 265    |           | mg/L |   | 93   | 70 - 120 |   |

### Lab Sample ID: 440-245408-A-1 MSD Matrix: Water Analysis Batch: 556931

| Analysis Daten. 550551 | Sample | Sample    | Spike | MSD    | MSD       |      |   |      | %Rec.    |     | RPD   |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|-----|-------|
| Analyte                | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
| Chemical Oxygen Demand | 79     |           | 200   | 268    |           | mg/L |   | 95   | 70 - 120 | 1   | 15    |

### Lab Sample ID: 440-245408-A-1 DU Matrix: Water Analysis Batch: 556931 Sample Sample

# r Unit D RPD Limits RPD Limit 15 mg/L D MRec Limits RPD Limit 15 Client Sample ID: Duplicate Prep Type: Total/NA

**Client Sample ID: Matrix Spike Duplicate** 

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

Prep Type: Total/NA

| Analysis Batch: 556931 |        |           |          |           |      |   |      |     |       |
|------------------------|--------|-----------|----------|-----------|------|---|------|-----|-------|
|                        | Sample | Sample    | DU       | DU        |      |   |      |     | RPD   |
| Analyte                | Result | Qualifier | Result   | Qualifier | Unit | D |      | RPD | Limit |
| Chemical Oxygen Demand | 79     |           | <br>83.2 |           | mg/L |   | <br> | 6   | 15    |

Prep Type

Total/NA

Total/NA

Matrix

Water

Water

**Client Sample ID** 

06 25 OD STREAMS

06 25 BUTCH DUP

Lab Control Sample

Matrix Spike Duplicate

**Client Sample ID** 

OD STREAMS

OD STREAMS

Method Blank

Matrix Spike

Lab Control Sample

Matrix Spike Duplicate

Method Blank

Matrix Spike

**GC/MS VOA** 

Lab Sample ID

440-245042-2

440-245042-3

MB 440-556388/4

LCS 440-556388/5

440-244865-A-2 MS

Lab Sample ID

440-245042-5

440-245042-7

MB 440-556394/4

LCS 440-556394/5

440-244985-B-1 MS

440-244985-B-1 MSD

440-244865-A-2 MSD

Analysis Batch: 556394

Analysis Batch: 556388

Prep Batch

| Total/NA  | Water  | 8260B  |            |
|-----------|--------|--------|------------|
| Total/NA  | Water  | 8260B  |            |
| Total/NA  | Water  | 8260B  |            |
| Total/NA  | Water  | 8260B  |            |
| Ргер Туре | Matrix | Method | Prep Batch |
| Total/NA  | Water  | 8260B  |            |
| Ргер Туре | Matrix | Method | Prep Batch |
| Total/NA  | Water  | 8260B  |            |
| Total/NA  | Water  | 8260B  |            |
| Total/NIA | Water  | 0260P  |            |

Method

8260B

8260B

### Analysis Batch: 556543

| Lab Sample ID      | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |  |
|--------------------|------------------------|-----------|--------|--------|------------|--|
| 440-245042-1       | 06 25 BUTCH            | Total/NA  | Water  | 8260B  |            |  |
| 440-245042-3 - RA  | 06 25 BUTCH DUP        | Total/NA  | Water  | 8260B  |            |  |
| MB 440-556543/5    | Method Blank           | Total/NA  | Water  | 8260B  |            |  |
| LCS 440-556543/6   | Lab Control Sample     | Total/NA  | Water  | 8260B  |            |  |
| 440-245245-C-1 MS  | Matrix Spike           | Total/NA  | Water  | 8260B  |            |  |
| 440-245245-C-1 MSD | Matrix Spike Duplicate | Total/NA  | Water  | 8260B  |            |  |
|                    |                        |           |        |        |            |  |

### Analysis Batch: 556591

| Lab Sample ID      | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|--------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-4       | BUTCHER                | Total/NA  | Water  | 8260B  |            |
| 440-245042-6       | BUTCHER                | Total/NA  | Water  | 8260B  |            |
| MB 440-556591/4    | Method Blank           | Total/NA  | Water  | 8260B  |            |
| LCS 440-556591/5   | Lab Control Sample     | Total/NA  | Water  | 8260B  |            |
| 440-245066-F-1 MSD | Matrix Spike Duplicate | Total/NA  | Water  | 8260B  |            |

# **GC/MS Semi VOA**

### Prep Batch: 556176

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1        | 06 25 BUTCH            | Total/NA  | Water  | 625    |            |
| 440-245042-2        | 06 25 OD STREAMS       | Total/NA  | Water  | 625    |            |
| 440-245042-3        | 06 25 BUTCH DUP        | Total/NA  | Water  | 625    |            |
| 440-245042-4        | BUTCHER                | Total/NA  | Water  | 625    |            |
| 440-245042-5        | OD STREAMS             | Total/NA  | Water  | 625    |            |
| 440-245042-6        | BUTCHER                | Total/NA  | Water  | 625    |            |
| 440-245042-7        | OD STREAMS             | Total/NA  | Water  | 625    |            |
| MB 440-556176/1-A   | Method Blank           | Total/NA  | Water  | 625    |            |
| LCS 440-556176/2-A  | Lab Control Sample     | Total/NA  | Water  | 625    |            |
| LCSD 440-556176/3-A | Lab Control Sample Dup | Total/NA  | Water  | 625    |            |

### Analysis Batch: 556467

| Lab Sample ID | Client Sample ID | Ргер Туре | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 440-245042-1  | 06 25 BUTCH      | Total/NA  | Water  | 625    | 556176     |

### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

# GC/MS Semi VOA (Continued)

### Analysis Batch: 556467 (Continued)

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-2        | 06 25 OD STREAMS       | Total/NA  | Water  | 625    | 556176     |
| 440-245042-3        | 06 25 BUTCH DUP        | Total/NA  | Water  | 625    | 556176     |
| 440-245042-4        | BUTCHER                | Total/NA  | Water  | 625    | 556176     |
| 440-245042-5        | OD STREAMS             | Total/NA  | Water  | 625    | 556176     |
| 440-245042-6        | BUTCHER                | Total/NA  | Water  | 625    | 556176     |
| 440-245042-7        | OD STREAMS             | Total/NA  | Water  | 625    | 556176     |
| MB 440-556176/1-A   | Method Blank           | Total/NA  | Water  | 625    | 556176     |
| LCS 440-556176/2-A  | Lab Control Sample     | Total/NA  | Water  | 625    | 556176     |
| LCSD 440-556176/3-A | Lab Control Sample Dup | Total/NA  | Water  | 625    | 556176     |

### HPLC/IC

### Prep Batch: 555931

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method      | Prep Batch |
|----------------------|------------------------|-----------|--------|-------------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | 8315_W_Prep |            |
| MB 440-555931/1-A    | Method Blank           | Total/NA  | Water  | 8315_W_Prep |            |
| LCS 440-555931/2-A   | Lab Control Sample     | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245033-A-1-A MS  | Matrix Spike           | Total/NA  | Water  | 8315_W_Prep |            |
| 440-245033-A-1-B MSD | Matrix Spike Duplicate | Total/NA  | Water  | 8315_W_Prep |            |

### Analysis Batch: 556054

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | 8315A  | 555931     |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | 8315A  | 555931     |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | 8315A  | 555931     |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | 8315A  | 555931     |
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | 8315A  | 555931     |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | 8315A  | 555931     |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | 8315A  | 555931     |
| MB 440-555931/1-A    | Method Blank           | Total/NA  | Water  | 8315A  | 555931     |
| LCS 440-555931/2-A   | Lab Control Sample     | Total/NA  | Water  | 8315A  | 555931     |
| 440-245033-A-1-A MS  | Matrix Spike           | Total/NA  | Water  | 8315A  | 555931     |
| 440-245033-A-1-B MSD | Matrix Spike Duplicate | Total/NA  | Water  | 8315A  | 555931     |

### Analysis Batch: 556718

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method      | Prep Batch |
|---------------|------------------|-----------|--------|-------------|------------|
| 440-245042-1  | 06 25 BUTCH      | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-245042-2  | 06 25 OD STREAMS | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-245042-3  | 06 25 BUTCH DUP  | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-245042-4  | BUTCHER          | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-245042-5  | OD STREAMS       | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-245042-6  | BUTCHER          | Total/NA  | Water  | NO3NO2 Calc |            |
| 440-245042-7  | OD STREAMS       | Total/NA  | Water  | NO3NO2 Calc |            |

Prep Type

Total Recoverable

**Total Recoverable** 

**Total Recoverable** 

**Total Recoverable** 

Total Recoverable

**Total Recoverable** 

**Total Recoverable** 

Prep Type

Total/NA

Total/NA

Total/NA

Total/NA

Total/NA

Total/NA

Total/NA

Matrix

Water

Water

Water

Water

Water

Water

Water

Matrix

Water

Water

Water

Water

Water

Water

Water

**Client Sample ID** 

06 25 BUTCH

BUTCHER

BUTCHER

Method Blank

Matrix Spike

Lab Control Sample

**Client Sample ID** 

06 25 OD STREAMS

06 25 BUTCH DUP

06 25 BUTCH

BUTCHER

BUTCHER

OD STREAMS

OD STREAMS

Matrix Spike Duplicate

**Metals** 

Prep Batch: 555968

Lab Sample ID

440-245042-1

440-245042-4

440-245042-6

MB 440-555968/1-A

LCS 440-555968/2-A

440-244854-A-3-B MS

440-244854-A-3-C MSD

Prep Batch: 556247

Lab Sample ID

440-245042-1

440-245042-2

440-245042-3

440-245042-4

440-245042-5

440-245042-6

440-245042-7

Prep Batch

Prep Batch

Method

3005A

3005A

3005A

3005A

3005A

3005A

3005A

Method 7470A

7470A

7470A

7470A

7470A

7470A

7470A

# 9 10 11 12

Lab Sample ID Prep Type **Client Sample ID** Matrix Method Prep Batch 06 25 BUTCH 440-245042-1 Total Recoverable Water 6010B 555968 440-245042-4 BUTCHER **Total Recoverable** Water 6010B 555968 440-245042-6 BUTCHER **Total Recoverable** Water 6010B 555968 MB 440-555968/1-A 555968 Method Blank **Total Recoverable** Water 6010B LCS 440-555968/2-A Lab Control Sample **Total Recoverable** Water 6010B 555968 Total Recoverable 440-244854-A-3-B MS Matrix Spike Water 6010B 555968 6010B 440-244854-A-3-C MSD Matrix Spike Duplicate **Total Recoverable** Water 555968

### Analysis Batch: 556352

Analysis Batch: 556263

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 440-245042-1  | 06 25 BUTCH      | Total/NA  | Water  | 7470A  | 556247     |
| 440-245042-2  | 06 25 OD STREAMS | Total/NA  | Water  | 7470A  | 556247     |
| 440-245042-3  | 06 25 BUTCH DUP  | Total/NA  | Water  | 7470A  | 556247     |
| 440-245042-4  | BUTCHER          | Total/NA  | Water  | 7470A  | 556247     |
| 440-245042-5  | OD STREAMS       | Total/NA  | Water  | 7470A  | 556247     |
| 440-245042-6  | BUTCHER          | Total/NA  | Water  | 7470A  | 556247     |
| 440-245042-7  | OD STREAMS       | Total/NA  | Water  | 7470A  | 556247     |

### Prep Batch: 556431

| Lab Sample ID        | Client Sample ID       | Ргер Туре         | Matrix | Method | Prep Batch |
|----------------------|------------------------|-------------------|--------|--------|------------|
| 440-245042-2         | 06 25 OD STREAMS       | Total Recoverable | Water  | 3005A  |            |
| 440-245042-3         | 06 25 BUTCH DUP        | Total Recoverable | Water  | 3005A  |            |
| 440-245042-5         | OD STREAMS             | Total Recoverable | Water  | 3005A  |            |
| 440-245042-7         | OD STREAMS             | Total Recoverable | Water  | 3005A  |            |
| MB 440-556431/1-A    | Method Blank           | Total Recoverable | Water  | 3005A  |            |
| LCS 440-556431/2-A   | Lab Control Sample     | Total Recoverable | Water  | 3005A  |            |
| 440-245154-J-1-B MS  | Matrix Spike           | Total Recoverable | Water  | 3005A  |            |
| 440-245154-J-1-C MSD | Matrix Spike Duplicate | Total Recoverable | Water  | 3005A  |            |

# q

|         | 3  |
|---------|----|
| p Batch |    |
|         |    |
|         |    |
|         | 13 |
|         |    |
|         |    |

| Metals   |        |        |
|----------|--------|--------|
| Analysis | Batch: | 556566 |

| Lab Sample ID        | Client Sample ID       | Prep Type         | Matrix | Method | Prep Batch |
|----------------------|------------------------|-------------------|--------|--------|------------|
| 440-245042-2         | 06 25 OD STREAMS       | Total Recoverable | Water  | 6010B  | 556431     |
| 440-245042-3         | 06 25 BUTCH DUP        | Total Recoverable | Water  | 6010B  | 556431     |
| 440-245042-5         | OD STREAMS             | Total Recoverable | Water  | 6010B  | 556431     |
| 440-245042-7         | OD STREAMS             | Total Recoverable | Water  | 6010B  | 556431     |
| MB 440-556431/1-A    | Method Blank           | Total Recoverable | Water  | 6010B  | 556431     |
| LCS 440-556431/2-A   | Lab Control Sample     | Total Recoverable | Water  | 6010B  | 556431     |
| 440-245154-J-1-B MS  | Matrix Spike           | Total Recoverable | Water  | 6010B  | 556431     |
| 440-245154-J-1-C MSD | Matrix Spike Duplicate | Total Recoverable | Water  | 6010B  | 556431     |
| General Chemistr     | у                      |                   |        |        |            |
| Analysis Batch: 2844 | 32                     |                   |        |        |            |
| -<br>Lab Sample ID   | Client Sample ID       | Pren Type         | Matrix | Method | Prep Batch |

| Lab Sample ID    | Client Sample ID | Prep Type | Matrix | Method        | Prep Batch |  |
|------------------|------------------|-----------|--------|---------------|------------|--|
| 440-245042-1     | 06 25 BUTCH      | Total/NA  | Water  | ASTM D5057-90 |            |  |
| 440-245042-2     | 06 25 OD STREAMS | Total/NA  | Water  | ASTM D5057-90 |            |  |
| 440-245042-3     | 06 25 BUTCH DUP  | Total/NA  | Water  | ASTM D5057-90 |            |  |
| 440-245042-4     | BUTCHER          | Total/NA  | Water  | ASTM D5057-90 |            |  |
| 440-245042-5     | OD STREAMS       | Total/NA  | Water  | ASTM D5057-90 |            |  |
| 440-245042-6     | BUTCHER          | Total/NA  | Water  | ASTM D5057-90 |            |  |
| 440-245042-7     | OD STREAMS       | Total/NA  | Water  | ASTM D5057-90 |            |  |
| 180-92006-A-1 DU | Duplicate        | Total/NA  | Water  | ASTM D5057-90 |            |  |

### Analysis Batch: 306826

| Lab Sample ID      | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|--------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1       | 06 25 BUTCH            | Total/NA  | Water  | 353.2  |            |
| 440-245042-2       | 06 25 OD STREAMS       | Total/NA  | Water  | 353.2  |            |
| 440-245042-3       | 06 25 BUTCH DUP        | Total/NA  | Water  | 353.2  |            |
| 440-245042-4       | BUTCHER                | Total/NA  | Water  | 353.2  |            |
| 440-245042-5       | OD STREAMS             | Total/NA  | Water  | 353.2  |            |
| 440-245042-6       | BUTCHER                | Total/NA  | Water  | 353.2  |            |
| 440-245042-7       | OD STREAMS             | Total/NA  | Water  | 353.2  |            |
| MB 320-306826/15   | Method Blank           | Total/NA  | Water  | 353.2  |            |
| LCS 320-306826/16  | Lab Control Sample     | Total/NA  | Water  | 353.2  |            |
| 440-244710-A-1 MS  | Matrix Spike           | Total/NA  | Water  | 353.2  |            |
| 440-244710-A-1 MSD | Matrix Spike Duplicate | Total/NA  | Water  | 353.2  |            |

### Analysis Batch: 555904

| Lab Sample ID   | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-----------------|------------------|-----------|--------|--------|------------|
| 440-245042-1    | 06 25 BUTCH      | Total/NA  | Water  | 2540E  |            |
| 440-245042-2    | 06 25 OD STREAMS | Total/NA  | Water  | 2540E  |            |
| 440-245042-3    | 06 25 BUTCH DUP  | Total/NA  | Water  | 2540E  |            |
| 440-245042-4    | BUTCHER          | Total/NA  | Water  | 2540E  |            |
| 440-245042-5    | OD STREAMS       | Total/NA  | Water  | 2540E  |            |
| 440-245042-6    | BUTCHER          | Total/NA  | Water  | 2540E  |            |
| 440-245042-7    | OD STREAMS       | Total/NA  | Water  | 2540E  |            |
| MB 440-555904/1 | Method Blank     | Total/NA  | Water  | 2540E  |            |
| 440-245042-1 DU | 06 25 BUTCH      | Total/NA  | Water  | 2540E  |            |

### Analysis Batch: 555974

| Lab Sample ID | Client Sample ID | Prep Туре | Matrix | Method   | Prep Batch |
|---------------|------------------|-----------|--------|----------|------------|
| 440-245042-1  | 06 25 BUTCH      | Total/NA  | Water  | SM 2540B |            |

### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

# **General Chemistry (Continued)**

### Analysis Batch: 555974 (Continued)

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method   | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| 440-245042-2     | 06 25 OD STREAMS   | Total/NA  | Water  | SM 2540B |            |
| 440-245042-3     | 06 25 BUTCH DUP    | Total/NA  | Water  | SM 2540B |            |
| 440-245042-4     | BUTCHER            | Total/NA  | Water  | SM 2540B |            |
| 440-245042-5     | OD STREAMS         | Total/NA  | Water  | SM 2540B |            |
| 440-245042-6     | BUTCHER            | Total/NA  | Water  | SM 2540B |            |
| 440-245042-7     | OD STREAMS         | Total/NA  | Water  | SM 2540B |            |
| MB 440-555974/1  | Method Blank       | Total/NA  | Water  | SM 2540B |            |
| LCS 440-555974/2 | Lab Control Sample | Total/NA  | Water  | SM 2540B |            |
| 440-245042-1 DU  | 06 25 BUTCH        | Total/NA  | Water  | SM 2540B |            |

### Prep Batch: 556015

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method     | Prep Batch |
|----------------------|------------------------|-----------|--------|------------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | Distill/CN |            |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | Distill/CN |            |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | Distill/CN |            |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | Distill/CN |            |
| MB 440-556015/1-A    | Method Blank           | Total/NA  | Water  | Distill/CN |            |
| LCS 440-556015/2-A   | Lab Control Sample     | Total/NA  | Water  | Distill/CN |            |
| 440-245069-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | Distill/CN |            |
| 440-245069-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | Distill/CN |            |

### Analysis Batch: 556040

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method       | Prep Batch |
|----------------------|------------------------|-----------|--------|--------------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | SM 4500 CN E | 556015     |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | SM 4500 CN E | 556015     |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | SM 4500 CN E | 556015     |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | SM 4500 CN E | 556015     |
| MB 440-556015/1-A    | Method Blank           | Total/NA  | Water  | SM 4500 CN E | 556015     |
| LCS 440-556015/2-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 CN E | 556015     |
| 440-245069-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | SM 4500 CN E | 556015     |
| 440-245069-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 4500 CN E | 556015     |

### Prep Batch: 556121

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method     | Prep Batch |
|----------------------|------------------------|-----------|--------|------------|------------|
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | Distill/CN |            |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | Distill/CN |            |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | Distill/CN |            |
| MB 440-556121/1-A    | Method Blank           | Total/NA  | Water  | Distill/CN |            |
| LCS 440-556121/2-A   | Lab Control Sample     | Total/NA  | Water  | Distill/CN |            |
| 440-244677-A-6-B MS  | Matrix Spike           | Total/NA  | Water  | Distill/CN |            |
| 440-244677-A-6-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | Distill/CN |            |

### Prep Batch: 556152

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method Prep Batcl |
|---------------|------------------|-----------|--------|-------------------|
| 440-245042-1  | 06 25 BUTCH      | Total/NA  | Water  | SM 4500 NH3 B     |
| 440-245042-2  | 06 25 OD STREAMS | Total/NA  | Water  | SM 4500 NH3 B     |
| 440-245042-3  | 06 25 BUTCH DUP  | Total/NA  | Water  | SM 4500 NH3 B     |
| 440-245042-4  | BUTCHER          | Total/NA  | Water  | SM 4500 NH3 B     |
| 440-245042-5  | OD STREAMS       | Total/NA  | Water  | SM 4500 NH3 B     |
| 440-245042-6  | BUTCHER          | Total/NA  | Water  | SM 4500 NH3 B     |
| 440-245042-7  | OD STREAMS       | Total/NA  | Water  | SM 4500 NH3 B     |

Eurofins TestAmerica, Irvine

### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

### **General Chemistry (Continued)**

### Prep Batch: 556152 (Continued)

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method        | Prep Batch |
|----------------------|------------------------|-----------|--------|---------------|------------|
| MB 440-556152/2-A    | Method Blank           | Total/NA  | Water  | SM 4500 NH3 B |            |
| LCS 440-556152/1-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 B |            |
| MRL 440-556152/3-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-245045-A-1-B MS  | Matrix Spike           | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-245045-A-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 4500 NH3 B |            |
| 440-245045-A-1-A DU  | Duplicate              | Total/NA  | Water  | SM 4500 NH3 B |            |

### Analysis Batch: 556165

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method        | Prep Batch |
|----------------------|------------------------|-----------|--------|---------------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| MB 440-556152/2-A    | Method Blank           | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| LCS 440-556152/1-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| MRL 440-556152/3-A   | Lab Control Sample     | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245045-A-1-B MS  | Matrix Spike           | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245045-A-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 4500 NH3 D | 556152     |
| 440-245045-A-1-A DU  | Duplicate              | Total/NA  | Water  | SM 4500 NH3 D | 556152     |

### Prep Batch: 556226

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method          | Prep Batch |
|----------------------|------------------------|-----------|--------|-----------------|------------|
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | 365.2/365.3/365 |            |
| MB 440-556226/1-A    | Method Blank           | Total/NA  | Water  | 365.2/365.3/365 |            |
| LCS 440-556226/2-A   | Lab Control Sample     | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245005-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245005-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 365.2/365.3/365 |            |

### Analysis Batch: 556268

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | 365.3  | 556226     |
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | 365.3  | 556226     |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | 365.3  | 556226     |
| MB 440-556226/1-A    | Method Blank           | Total/NA  | Water  | 365.3  | 556226     |
| LCS 440-556226/2-A   | Lab Control Sample     | Total/NA  | Water  | 365.3  | 556226     |
| 440-245005-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | 365.3  | 556226     |
| 440-245005-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 365.3  | 556226     |

### Analysis Batch: 556276

| Lab Sample ID       | Client Sample ID   | Prep Type | Matrix | Method       | Prep Batch |
|---------------------|--------------------|-----------|--------|--------------|------------|
| 440-245042-5        | OD STREAMS         | Total/NA  | Water  | SM 4500 CN E | 556121     |
| 440-245042-6        | BUTCHER            | Total/NA  | Water  | SM 4500 CN E | 556121     |
| 440-245042-7        | OD STREAMS         | Total/NA  | Water  | SM 4500 CN E | 556121     |
| MB 440-556121/1-A   | Method Blank       | Total/NA  | Water  | SM 4500 CN E | 556121     |
| LCS 440-556121/2-A  | Lab Control Sample | Total/NA  | Water  | SM 4500 CN E | 556121     |
| 440-244677-A-6-B MS | Matrix Spike       | Total/NA  | Water  | SM 4500 CN E | 556121     |

### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

# General Chemistry (Continued)

### Analysis Batch: 556276 (Continued)

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method          | Prep Batch |
|----------------------|------------------------|-----------|--------|-----------------|------------|
| 440-244677-A-6-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 4500 CN E    | 556121     |
| Prep Batch: 556299   |                        |           |        |                 |            |
| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method          | Prep Batch |
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | 365.2/365.3/365 |            |
| MB 440-556299/1-A    | Method Blank           | Total/NA  | Water  | 365.2/365.3/365 |            |
| LCS 440-556299/2-A   | Lab Control Sample     | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245008-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | 365.2/365.3/365 |            |
| 440-245008-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 365.2/365.3/365 |            |
|                      |                        |           |        |                 |            |

### Prep Batch: 556300

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | 351.2  |            |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | 351.2  |            |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | 351.2  |            |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | 351.2  |            |
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | 351.2  |            |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | 351.2  |            |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | 351.2  |            |
| MB 440-556300/3-A    | Method Blank           | Total/NA  | Water  | 351.2  |            |
| LCS 440-556300/4-A   | Lab Control Sample     | Total/NA  | Water  | 351.2  |            |
| LCSD 440-556300/5-A  | Lab Control Sample Dup | Total/NA  | Water  | 351.2  |            |
| 440-245031-B-3-B MS  | Matrix Spike           | Total/NA  | Water  | 351.2  |            |
| 440-245031-B-3-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 351.2  |            |
| 440-245181-A-1-D MS  | Matrix Spike           | Total/NA  | Water  | 351.2  |            |
| 440-245181-A-1-E MSD | Matrix Spike Duplicate | Total/NA  | Water  | 351.2  |            |

### Analysis Batch: 556353

| Lab Sample ID        | Client Sample ID       | Ргер Туре | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | 365.3  | 556299     |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | 365.3  | 556299     |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | 365.3  | 556299     |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | 365.3  | 556299     |
| MB 440-556299/1-A    | Method Blank           | Total/NA  | Water  | 365.3  | 556299     |
| LCS 440-556299/2-A   | Lab Control Sample     | Total/NA  | Water  | 365.3  | 556299     |
| 440-245008-B-1-B MS  | Matrix Spike           | Total/NA  | Water  | 365.3  | 556299     |
| 440-245008-B-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 365.3  | 556299     |

### Prep Batch: 556396

| Lab Sample ID     | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|------------------|-----------|--------|--------|------------|
| 440-245042-1      | 06 25 BUTCH      | Total/NA  | Water  | 1664A  |            |
| 440-245042-2      | 06 25 OD STREAMS | Total/NA  | Water  | 1664A  |            |
| 440-245042-3      | 06 25 BUTCH DUP  | Total/NA  | Water  | 1664A  |            |
| 440-245042-4      | BUTCHER          | Total/NA  | Water  | 1664A  |            |
| 440-245042-5      | OD STREAMS       | Total/NA  | Water  | 1664A  |            |
| 440-245042-6      | BUTCHER          | Total/NA  | Water  | 1664A  |            |
| 440-245042-7      | OD STREAMS       | Total/NA  | Water  | 1664A  |            |
| MB 440-556396/1-A | Method Blank     | Total/NA  | Water  | 1664A  |            |

Eurofins TestAmerica, Irvine

Job ID: 440-245042-1

### Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

## **General Chemistry (Continued)**

### Prep Batch: 556396 (Continued)

| Lab Sample ID       | Client Sample ID       | Prep Туре | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| LCS 440-556396/2-A  | Lab Control Sample     | Total/NA  | Water  | 1664A  |            |
| LCSD 440-556396/3-A | Lab Control Sample Dup | Total/NA  | Water  | 1664A  |            |

### Analysis Batch: 556472

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1        | 06 25 BUTCH            | Total/NA  | Water  | 1664A  | 556396     |
| 440-245042-2        | 06 25 OD STREAMS       | Total/NA  | Water  | 1664A  | 556396     |
| 440-245042-3        | 06 25 BUTCH DUP        | Total/NA  | Water  | 1664A  | 556396     |
| 440-245042-4        | BUTCHER                | Total/NA  | Water  | 1664A  | 556396     |
| 440-245042-5        | OD STREAMS             | Total/NA  | Water  | 1664A  | 556396     |
| 440-245042-6        | BUTCHER                | Total/NA  | Water  | 1664A  | 556396     |
| 440-245042-7        | OD STREAMS             | Total/NA  | Water  | 1664A  | 556396     |
| MB 440-556396/1-A   | Method Blank           | Total/NA  | Water  | 1664A  | 556396     |
| LCS 440-556396/2-A  | Lab Control Sample     | Total/NA  | Water  | 1664A  | 556396     |
| LCSD 440-556396/3-A | Lab Control Sample Dup | Total/NA  | Water  | 1664A  | 556396     |

### Analysis Batch: 556894

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | 351.2  | 556300     |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | 351.2  | 556300     |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | 351.2  | 556300     |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | 351.2  | 556300     |
| MB 440-556300/3-A    | Method Blank           | Total/NA  | Water  | 351.2  | 556300     |
| LCS 440-556300/4-A   | Lab Control Sample     | Total/NA  | Water  | 351.2  | 556300     |
| LCSD 440-556300/5-A  | Lab Control Sample Dup | Total/NA  | Water  | 351.2  | 556300     |
| 440-245031-B-3-B MS  | Matrix Spike           | Total/NA  | Water  | 351.2  | 556300     |
| 440-245031-B-3-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 351.2  | 556300     |
| 440-245181-A-1-D MS  | Matrix Spike           | Total/NA  | Water  | 351.2  | 556300     |
| 440-245181-A-1-E MSD | Matrix Spike Duplicate | Total/NA  | Water  | 351.2  | 556300     |

### Analysis Batch: 556931

| Lab Sample ID      | Client Sample ID       | Prep Type | Matrix | Method   | Prep Batch |
|--------------------|------------------------|-----------|--------|----------|------------|
| 440-245042-1       | 06 25 BUTCH            | Total/NA  | Water  | SM 5220D |            |
| 440-245042-2       | 06 25 OD STREAMS       | Total/NA  | Water  | SM 5220D |            |
| 440-245042-3       | 06 25 BUTCH DUP        | Total/NA  | Water  | SM 5220D |            |
| 440-245042-4       | BUTCHER                | Total/NA  | Water  | SM 5220D |            |
| 440-245042-5       | OD STREAMS             | Total/NA  | Water  | SM 5220D |            |
| 440-245042-6       | BUTCHER                | Total/NA  | Water  | SM 5220D |            |
| 440-245042-7       | OD STREAMS             | Total/NA  | Water  | SM 5220D |            |
| MB 440-556931/3    | Method Blank           | Total/NA  | Water  | SM 5220D |            |
| LCS 440-556931/4   | Lab Control Sample     | Total/NA  | Water  | SM 5220D |            |
| 440-245408-A-1 MS  | Matrix Spike           | Total/NA  | Water  | SM 5220D |            |
| 440-245408-A-1 MSD | Matrix Spike Duplicate | Total/NA  | Water  | SM 5220D |            |
| 440-245408-A-1 DU  | Duplicate              | Total/NA  | Water  | SM 5220D |            |

### Analysis Batch: 556947

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 440-245042-3  | 06 25 BUTCH DUP  | Total/NA  | Water  | 351.2  | 556300     |
| 440-245042-5  | OD STREAMS       | Total/NA  | Water  | 351.2  | 556300     |
| 440-245042-7  | OD STREAMS       | Total/NA  | Water  | 351.2  | 556300     |

### Job ID: 440-245042-1

9

# **General Chemistry**

### Analysis Batch: 557104

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method         | Prep Batch |
|---------------|------------------|-----------|--------|----------------|------------|
| 440-245042-1  | 06 25 BUTCH      | Total/NA  | Water  | Total Nitrogen |            |
| 440-245042-2  | 06 25 OD STREAMS | Total/NA  | Water  | Total Nitrogen |            |
| 440-245042-3  | 06 25 BUTCH DUP  | Total/NA  | Water  | Total Nitrogen |            |
| 440-245042-4  | BUTCHER          | Total/NA  | Water  | Total Nitrogen |            |
| 440-245042-5  | OD STREAMS       | Total/NA  | Water  | Total Nitrogen |            |
| 440-245042-6  | BUTCHER          | Total/NA  | Water  | Total Nitrogen |            |
| 440-245042-7  | OD STREAMS       | Total/NA  | Water  | Total Nitrogen |            |

### Prep Batch: 577256

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method         | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 440-245042-1        | 06 25 BUTCH            | Total/NA  | Water  | Distill/Phenol | _          |
| 440-245042-2        | 06 25 OD STREAMS       | Total/NA  | Water  | Distill/Phenol |            |
| 440-245042-3        | 06 25 BUTCH DUP        | Total/NA  | Water  | Distill/Phenol |            |
| 440-245042-4        | BUTCHER                | Total/NA  | Water  | Distill/Phenol |            |
| 440-245042-5        | OD STREAMS             | Total/NA  | Water  | Distill/Phenol |            |
| 140-245042-6        | BUTCHER                | Total/NA  | Water  | Distill/Phenol |            |
| 40-245042-7         | OD STREAMS             | Total/NA  | Water  | Distill/Phenol |            |
| /IB 680-577256/1-A  | Method Blank           | Total/NA  | Water  | Distill/Phenol |            |
| CS 680-577256/2-A   | Lab Control Sample     | Total/NA  | Water  | Distill/Phenol |            |
| 40-245195-J-1-B MS  | Matrix Spike           | Total/NA  | Water  | Distill/Phenol |            |
| 40-245195-J-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | Distill/Phenol |            |

### Analysis Batch: 577344

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 440-245042-1         | 06 25 BUTCH            | Total/NA  | Water  | 420.1  | 577256     |
| 440-245042-2         | 06 25 OD STREAMS       | Total/NA  | Water  | 420.1  | 577256     |
| 440-245042-3         | 06 25 BUTCH DUP        | Total/NA  | Water  | 420.1  | 577256     |
| 440-245042-4         | BUTCHER                | Total/NA  | Water  | 420.1  | 577256     |
| 440-245042-5         | OD STREAMS             | Total/NA  | Water  | 420.1  | 577256     |
| 440-245042-6         | BUTCHER                | Total/NA  | Water  | 420.1  | 577256     |
| 440-245042-7         | OD STREAMS             | Total/NA  | Water  | 420.1  | 577256     |
| MB 680-577256/1-A    | Method Blank           | Total/NA  | Water  | 420.1  | 577256     |
| LCS 680-577256/2-A   | Lab Control Sample     | Total/NA  | Water  | 420.1  | 577256     |
| 440-245195-J-1-B MS  | Matrix Spike           | Total/NA  | Water  | 420.1  | 577256     |
| 440-245195-J-1-C MSD | Matrix Spike Duplicate | Total/NA  | Water  | 420.1  | 577256     |

Job ID: 440-245042-1

# Definitions/Glossary

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

Job ID: 440-245042-1

N

# Qualifiers

| Quannoio               |   |  |
|------------------------|---|--|
| GC/MS VOA<br>Qualifier | Qualifier Description   |  |
| *                      | LCS or LCSD is outside acceptance limits.   |  |
| *                      | ISTD response or retention time outside acceptable limits   |  |
| 4                      | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not |  |
|                        | applicable.   |  |
| F1                     | MS and/or MSD Recovery is outside acceptance limits.  |  |
| F2                     | MS/MSD RPD exceeds control limits   |  |
| J                      | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.                                |  |
| х                      | Surrogate is outside control limits   |  |
| GC/MS Semi             | VOA   |  |
| Qualifier              | Qualifier Description   |  |
| Н                      | Sample was prepped or analyzed beyond the specified holding time  |  |
| HPLC/IC                |   |  |
| Qualifier              | Qualifier Description   |  |
| Н                      | Sample was prepped or analyzed beyond the specified holding time  |  |
| Metals                 |   |  |
| Qualifier              | Qualifier Description   |  |
| 4                      | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not |  |
|                        | applicable.   |  |
| В                      | Compound was found in the blank and sample.   |  |
| J                      | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.                                |  |
| General Che            | mistry  |  |
|                        |   |  |
| Qualifier              | Qualifier Description   |  |
|                        |   |  |

# Glossary

| Abbreviation   | These commonly used abbreviations may or may not be present in this report.                                 |
|----------------|---|
| ĩ              | Listed under the "D" column to designate that the result is reported on a dry weight basis                  |
| %R             | Percent Recovery  |
| CFL            | Contains Free Liquid  |
| CNF            | Contains No Free Liquid   |
| DER            | Duplicate Error Ratio (normalized absolute difference)  |
| Dil Fac        | Dilution Factor   |
| DL             | Detection Limit (DoD/DOE)   |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC            | Decision Level Concentration (Radiochemistry)   |
| EDL            | Estimated Detection Limit (Dioxin)  |
| OD             | Limit of Detection (DoD/DOE)  |
| LOQ            | Limit of Quantitation (DoD/DOE)   |
| MDA            | Minimum Detectable Activity (Radiochemistry)  |
| NDC            | Minimum Detectable Concentration (Radiochemistry)   |
| MDL            | Method Detection Limit  |
| ИL             | Minimum Level (Dioxin)  |
| NC             | Not Calculated  |
| ND             | Not Detected at the reporting limit (or MDL or EDL if shown)  |
| PQL            | Practical Quantitation Limit  |
| QC             | Quality Control   |
| RER            | Relative Error Ratio (Radiochemistry)   |
| RL             | Reporting Limit or Requested Limit (Radiochemistry)   |
| RPD            | Relative Percent Difference, a measure of the relative difference between two points                        |
| ΓEF            | Toxicity Equivalent Factor (Dioxin)   |

# **Definitions/Glossary**

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

Job ID: 440-245042-1

# Glossary (Continued)

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|--------------|---|
| TEQ          | Toxicity Equivalent Quotient (Dioxin)                                       |

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

### Job ID: 440-245042-1

### Laboratory: Eurofins TestAmerica, Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority Program                            |                     | Program EPA Region   |                         | Identification Number       | er Expiration Date                 |  |  |  |
|--|---------------------|----------------------|-------------------------|-----------------------------|------------------------------------|--|--|--|
| California                                   | ornia State Program |                      | 9                       | CA ELAP 2706                | 06-30-19 *                         |  |  |  |
| The following analytes the agency does not o | •                   | , but the laboratory | is not certified by the | e governing authority. This | list may include analytes for whic |  |  |  |
| Analysis Method                              | Prep Method         | Matrix               | Analyt                  | e                           |                                    |  |  |  |
| 6010B  | 3005A               | Water                | Alumir                  | num                         |                                    |  |  |  |
| 6010B  | 3005A               | Water                | Boron                   | Boron                       |                                    |  |  |  |
| 6010B  | 3005A               | Water                | Magne                   | Magnesium                   |                                    |  |  |  |
| 6010B  | 3005A               | Water                | Manga                   | anganese                    |                                    |  |  |  |
| 6010B  | 3005A               | Water                | Titaniu                 | um                          |                                    |  |  |  |
| 8260B  |                     | Water                | m,p-X                   | ylene                       |                                    |  |  |  |
| 8260B  |                     | Water                | Xylene                  | es, Total                   |                                    |  |  |  |
| NO3NO2 Calc                                  |                     | Water                | Nitrate                 | e as N                      |                                    |  |  |  |
| NO3NO2 Calc                                  |                     | Water                | Nitrite                 | as N                        |                                    |  |  |  |
| SM 2540B                                     |                     | Water                | Total S                 | Solids                      |                                    |  |  |  |
| SM 4500 NH3 D                                | SM 4500 NH3 B       | Water                | Ammo                    | onia as NH3                 |                                    |  |  |  |
| Total Nitrogen                               |                     | Water                | Nitrog                  | en, Total                   |                                    |  |  |  |

### Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority              | Program       | EPA Region | Identification Number | Expiration Date |
|------------------------|---------------|------------|-----------------------|-----------------|
| Arkansas DEQ           | State         |            | 19-033-0              | 06-27-20        |
| Arkansas DEQ           | State Program | 6          | 88-0690               | 06-27-20        |
| California             | State         |            | 2891                  | 04-30-20        |
| California             | State Program | 9          | 2891                  | 04-30-20        |
| Connecticut            | State         |            | PH-0688               | 09-30-20        |
| Connecticut            | State Program | 1          | PH-0688               | 09-30-20        |
| Florida                | NELAP         | 4          | E871008               | 06-30-20        |
| Florida                | NELAP         |            | E871008               | 06-30-20        |
| Illinois               | NELAP         | 5          | 200005                | 06-30-20        |
| Illinois               | NELAP         |            | 004375                | 06-30-20        |
| Kansas                 | NELAP         | 7          | E-10350               | 01-31-20        |
| Kansas                 | NELAP         |            | E-10350               | 03-31-20        |
| Kentucky (UST)         | State Program | 4          | 162013                | 04-30-20        |
| Kentucky (WW)          | State Program | 4          | KY98043               | 12-31-19        |
| Louisiana              | NELAP         | 6          | 04041                 | 06-30-20        |
| Minnesota              | NELAP         | 5          | 042-999-482           | 12-31-19        |
| Minnesota              | NELAP         |            | 042-999-482           | 12-31-19        |
| Nevada                 | State         |            | PA00164               | 07-31-19        |
| Nevada                 | State Program | 9          | PA00164               | 08-31-19 *      |
| New Hampshire          | NELAP         | 1          | 2030                  | 04-04-20        |
| New Jersey             | NELAP         | 2          | PA005                 | 06-30-20        |
| New Jersey             | NELAP         |            | PA005                 | 06-30-20        |
| New York               | NELAP         | 2          | 11182                 | 03-31-20        |
| New York               | NELAP         |            | 11182                 | 04-01-20        |
| North Carolina (WW/SW) | State Program | 4          | 434                   | 12-31-19        |
| Dregon                 | NELAP         | 10         | PA-2151               | 02-06-20        |
| Oregon                 | NELAP         |            | PA-2151               | 02-06-20        |
| Pennsylvania           | NELAP         | 3          | 02-00416              | 04-30-20        |
| Pennsylvania           | NELAP         |            | 02-00416              | 04-30-20        |

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# **Accreditation/Certification Summary**

EPA Region

4

6

8

3

3

5

**Identification Number** 

LAO00362

LAO00362

T104704528

LE94312A-1

PA001462015-4

PA001462019-8

058448

460189

10043

142

142

998027800

998027800

P-Soil-01

T104704528-15-2

89014

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample

Authority

Texas

Texas

USDA

Utah

Utah

Virginia

Virginia

Wisconsin

Wisconsin

Rhode Island

Rhode Island

South Carolina

US Fish & Wildlife

US Fish & Wildlife

West Virginia DEP

West Virginia DEP

Program

State Program

State Program

**US Federal Programs** 

State

NELAP

NELAP

Federal

Federal

NELAP

NELAP

NELAP

NELAP

State Program

State Program

State

State

Laboratory: Eurofins TestAmerica, Pittsburgh (Continued) All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report. Job ID: 440-245042-1

**Expiration Date** 

12-30-19

12-30-19

04-30-20

03-31-20

03-31-20

07-31-19

07-31-20

06-26-22

05-31-20

05-31-20

09-14-19

09-14-19

01-31-20

01-31-20

08-31-19

08-31-19

# Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-245042-1

### Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority          | Program       | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------|------------|-----------------------|-----------------|
| Alaska (UST)       | State Program | 10         | 17-020                | 01-20-21        |
| ANAB               | DoD           |            | L2468                 | 01-20-21        |
| ANAB               | DOE           |            | L2468.01              | 01-20-21        |
| Arizona            | State Program | 9          | AZ0708                | 08-11-19        |
| Arkansas DEQ       | State Program | 6          | 88-0691               | 06-17-20        |
| California         | State Program | 9          | 2897                  | 01-31-20        |
| Colorado           | State Program | 8          | CA00044               | 08-31-19        |
| Connecticut        | State         |            | PH-0691               | 06-30-21        |
| Connecticut        | State Program | 1          | PH-0691               | 06-30-21        |
| Florida            | NELAP         | 4          | E87570                | 06-30-20        |
| Florida            | NELAP         |            | E87570                | 06-30-20        |
| Hawaii             | State Program | 9          | N/A                   | 01-29-20        |
| Illinois           | NELAP         | 5          | 200060                | 03-17-20 *      |
| Kansas             | NELAP         | 7          | E-10375               | 10-31-19        |
| Louisiana          | NELAP         | 6          | 30612                 | 06-30-20        |
| Maine              | State Program | 1          | CA0004                | 04-14-20        |
| Michigan           | State Program | 5          | 9947                  | 01-31-20        |
| Nevada             | State Program | 9          | CA00044               | 07-31-19        |
| New Hampshire      | NELAP         | 1          | 2997                  | 04-20-20        |
| New York           | NELAP         | 2          | 11666                 | 04-01-20        |
| Oregon             | NELAP         | 10         | 4040                  | 01-29-20        |
| Oregon             | NELAP         |            | 4040                  | 01-29-20        |
| Pennsylvania       | NELAP         | 3          | 68-01272              | 03-31-20        |
| Pennsylvania       | NELAP         |            | 68-01272              | 03-31-20        |
| Texas              | NELAP         | 6          | T104704399            | 05-31-20        |
| US Fish & Wildlife | Federal       |            | LE148388-0            | 07-31-19        |
| USDA               | Federal       |            | P330-18-00239         | 01-17-21        |
| USEPA UCMR         | Federal       | 1          | CA00044               | 12-31-20        |
| Utah               | NELAP         | 8          | CA00044               | 02-29-20        |
| Vermont            | State Program | 1          | VT-4040               | 04-16-20        |
| Virginia           | NELAP         | 3          | 460278                | 03-14-20        |
| Washington         | State Program | 10         | C581                  | 05-05-20        |
| West Virginia (DW) | State Program | 3          | 9930C                 | 12-31-19        |
| Wyoming            | State Program |            | 8TMS-L                | 01-28-19 *      |

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc. Project/Site: Ocean Disposal WW Sample Job ID: 440-245042-1

### Laboratory: Eurofins TestAmerica, Savannah

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority             | Program       | EPA Region | Identification Number | Expiration Date |
|-----------------------|---------------|------------|-----------------------|-----------------|
|                       | AFCEE         |            | SAVLAB                |                 |
| Alabama               | State Program | 4          | 41450                 | 06-30-19 *      |
| Alaska                | State Program | 10         |                       | 06-30-20        |
| laska (UST)           | State Program | 10         | UST-104               | 09-22-19        |
| NAB                   | DoD           |            | L2463                 | 09-22-19        |
| NAB                   | ISO/IEC 17025 |            | L2463.01              | 09-22-19        |
| Arizona               | State Program | 9          | AZ0808                | 12-14-19        |
| Arkansas DEQ          | State Program | 6          | 88-0692               | 02-01-20        |
| California            | State Program | 9          | 2939                  | 06-30-19 *      |
| Colorado              | State Program | 8          | N/A                   | 12-31-19        |
| Connecticut           | State Program | 1          | PH-0161               | 03-31-21        |
| lorida                | NELAP         | 4          | E87052                | 06-30-20        |
| eorgia                | State Program | 4          | 803                   | 06-30-20        |
| Guam                  | State Program | 9          | 15-005r               | 04-17-20        |
| lawaii                | State Program | 9          | N/A                   | 06-30-20        |
| linois                | NELAP         | 5          | 200022                | 11-30-19        |
| ndiana                | State Program | 5          | N/A                   | 06-30-20        |
| wa                    | State Program | 7          | 353                   | 06-30-20        |
| entucky (DW)          | State Program | 4          | 90084                 | 12-31-19        |
| entucky (UST)         | State Program | 4          | 18                    | 06-30-20        |
| entucky (WW)          | State Program | 4          | 90084                 | 12-31-19        |
| uisiana               | NELAP         | 6          | 30690                 | 06-30-20        |
| uisiana (DW)          | NELAP         | 6          | LA160019              | 12-31-19        |
| line                  | State Program | 1          | GA00006               | 09-25-20        |
| iryland               | State Program | 3          | 250                   | 12-31-19        |
| assachusetts          | State Program | 1          | M-GA006               | 06-30-20        |
| chigan                | State Program | 5          | 9925                  | 06-30-20        |
| ssissippi             | State Program | 4          | N/A                   | 06-30-19 *      |
| braska                | State Program | 7          | TestAmerica-Savannah  | 06-30-19 *      |
| w Jersey              | NELAP         | 2          | GA769                 | 06-30-20        |
| w Mexico              | State Program | 6          | N/A                   | 06-30-20        |
| w York                | NELAP         | 2          | 10842                 | 04-01-20        |
| orth Carolina (DW)    | State Program | 4          | 13701                 | 07-31-19 *      |
| orth Carolina (WW/SW) | State Program | 4          | 269                   | 12-31-19        |
| klahoma               | State Program | 6          | 9984                  | 08-31-19        |
| ennsylvania           | NELAP         | 3          | 68-00474              | 06-30-20        |
| uerto Rico            | State Program | 2          | GA00006               | 01-01-20        |
| outh Carolina         | State Program | 4          | 98001                 | 06-30-19 *      |
| ennessee              | State Program | 4          | TN02961               | 06-30-20        |
| exas                  | NELAP         | 6          | T104704185-19-13      | 11-30-19        |
| exas (DW)             | State Program | 1          | T104704185            | 06-30-20        |
| S Fish & Wildlife     | Federal       |            | LE058448-0            | 07-31-19        |
| rginia                | NELAP         | 3          | 460161                | 06-14-20        |
| /ashington            | State Program | 10         | C805                  | 06-10-20        |
| /est Virginia (DW)    | State Program | 3          | 9950C                 | 12-31-19        |
| /est Virginia DEP     | State Program | 3          | 094                   | 06-30-19 *      |
| /isconsin             | State Program | 5          | 999819810             | 08-31-19 *      |
| /yoming               | State Program | 8          | 8TMS-L                | 06-30-16 *      |

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



July 30, 2019

Lena Davidkova TestAmerica 17461 Derian Avenue Suite 100 Irvine, CA 92614-

Project Name:Ocean Disposal WW Sample 44022550Physis Project ID:1803004-004

Dear Lena,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 7/3/2019. 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:

Organics

Pyrethrins 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 714 602-5320 Extension 202 mistymercier@physislabs.com



# **PROJECT SAMPLE LIST**

| TestAmer<br>Ocean Disp | ica<br>Iosal WW Sample 44022550 |             | PHYSIS Project ID: 1803004-004<br>Total Samples: 6 |      |        |  |  |  |
|------------------------|---------------------------------|-------------|--|------|--------|--|--|--|
| PHYSIS I               | D Sample ID                     | Description | Date   | Time | Matrix |  |  |  |
| 64995                  | 06 25 BUTCH (440-245042-1)      |             | 6/25/2019  | 8:15 | Liquid |  |  |  |
| 64996                  | 06 25 BUTCH DUP (440-245042-3)  |             | 6/25/2019  | 8:15 | Liquid |  |  |  |
| 64997                  | BUTCHER (440-245042-4)          |             | 6/26/2019  | 6:06 | Liquid |  |  |  |
| 64998                  | OD STREAMS (440-245042-5)       |             | 6/26/2019  | 6:19 | Liquid |  |  |  |
| 64999                  | BUTCHER (440-245042-6)          |             | 6/27/2019  | 6:09 | Liquid |  |  |  |
| 65000                  | OD STREAMS (440-245042-7)       |             | 6/27/2019  | 6:22 | Liquid |  |  |  |

i - 2 of 6

(714) 602-5320 fax (714) 602-5321 Page 61 of 99

www.physislabs.com

CA ELAP #2769 7/31/2019 (Rev. 1)



# **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                  |

i - 3 of 6

(714) 602-5320 fax (714) 602-5321 Page 62 of 99



# 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

i - 4 of 6



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.

i - 5 of 6

(714) 602-5320 fax (714) 602-5321 Page 64 of 99



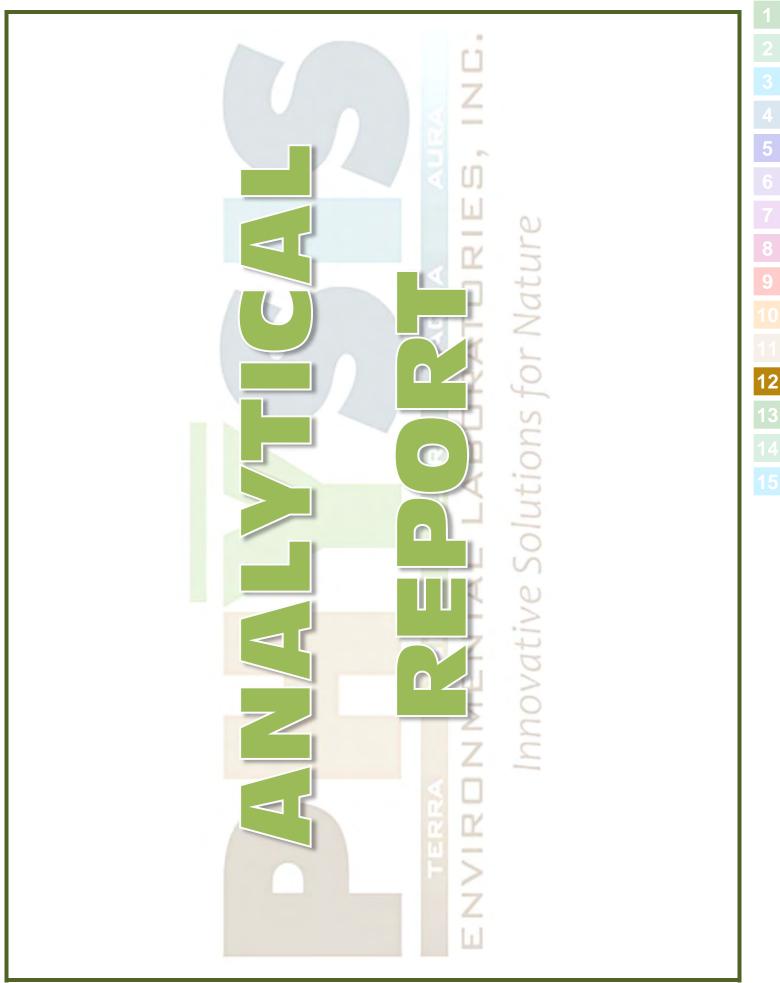
# PHYSIS QUALIFIER CODES

| 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<br>limits due to matrix interference. The associated B/BS were within limits,<br>therefore the sample data was reported without further clarification  |
| SH   | analyte concentration in the project sample exceeded the spike<br>concentration, therefore accuracy and/or precision acceptance limits do<br>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<br>readily achieved using routine laboratory practices, therefore accuracy<br>and/or precision acceptance limits do not apply  |
| Q    | analyte was outside the specified QAPP acceptance limits for precision<br>and/or accuracy but within Physis derived acceptance limits, therefore the<br>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 |

i - 6 of 6

(714) 602-5320 fax (714) 602-5321 Page 65 of 99

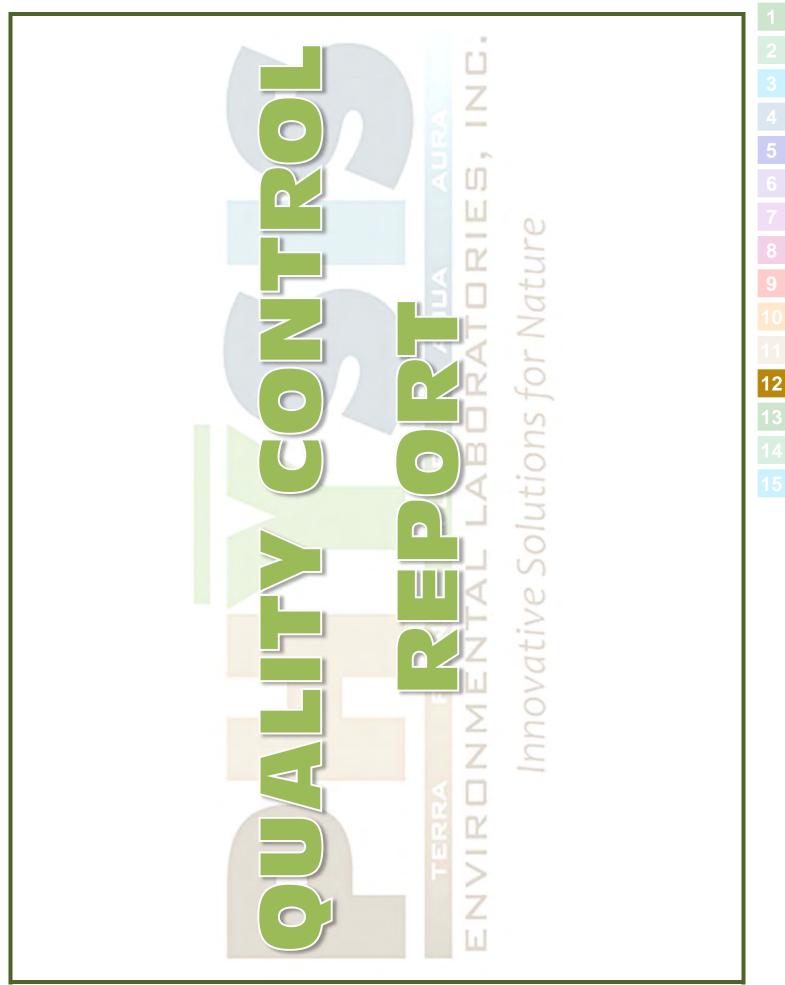
www.physislabs.com





PHYSIS Project ID: 1803004-004 Client: TestAmerica Project: Ocean Disposal WW Sample 44022550

| Pyrethroids         |   |             |        |                                   |                         |                |              |                       |                |               |
|---------------------|---|-------------|--------|-----------------------------------|-------------------------|----------------|--------------|-----------------------|----------------|---------------|
| ANALYTE             | Method  | Units       | RESULT | MDL                               | RL                      | Fraction QA C  | ODE          | Batch ID              | Date Processed | Date Analyzed |
| Sample ID: 64995-R1 | 06 25 BUTCH (440                              | 0-245042-1) | Ma     | atrix: Liquid                     |                         | Sampled: 25-Ju | n-19         | 8:15                  | Received: 03   | -Jul-19       |
| Pyrethrins          | EPA 625-NCI                                   | ng/L        | ND     | 100                               | 200                     | Total          | Н            | 0-23070               | 03-Jul-19      | 18-Jul-19     |
| Sample ID: 64996-R1 | o6 25 BUTCH DUP (440-245042-3) Matrix: Liquid |             |        | Sampled: 25-Ju                    | Sampled: 25-Jun-19 8:15 |                | Received: 03 | -Jul-19               |                |               |
| Pyrethrins          | EPA 625-NCI                                   | ng/L        | ND     | 100                               | 200                     | Total          | Н            | 0-23070               | 03-Jul-19      | 18-Jul-19     |
| Sample ID: 64997-R1 | BUTCHER (440-24                               | 15042-4)    | Ma     | atrix: Liquid                     |                         | Sampled: 26-Ju | n-19         | 6:06                  | Received: 03   | -Jul-19       |
| Pyrethrins          | EPA 625-NCI                                   | ng/L        | ND     | 100                               | 200                     | Total          |              | 0-23070               | 03-Jul-19      | 18-Jul-19     |
| Sample ID: 64998-R1 | OD STREAMS (44                                | 0-245042-5) | Ma     | Matrix: Liquid Sampled: 26-Jun-19 |                         | n-19           | 6:19         | 9 Received: 03-Jul-19 |                |               |
| Pyrethrins          | EPA 625-NCI                                   | ng/L        | ND     | 100                               | 200                     | Total          |              | 0-23070               | 03-Jul-19      | 18-Jul-19     |
| Sample ID: 64999-R1 | BUTCHER (440-24                               | 15042-6)    | Ma     | atrix: Liquid                     |                         | Sampled: 27-Ju | n-19         | 6:09                  | Received: 03   | -Jul-19       |
| Pyrethrins          | EPA 625-NCI                                   | ng/L        | ND     | 100                               | 200                     | Total          |              | 0-23070               | 03-Jul-19      | 18-Jul-19     |
| Sample ID: 65000-R1 | OD STREAMS (44                                | 0-245042-7) | Ma     | atrix: Liquid                     |                         | Sampled: 27-Ju | n-19         | 6:22                  | Received: 03   | -Jul-19       |
| Pyrethrins          | EPA 625-NCI                                   | ng/L        | ND     | 100                               | 200                     | Total          |              | 0-23070               | 03-Jul-19      | 18-Jul-19     |

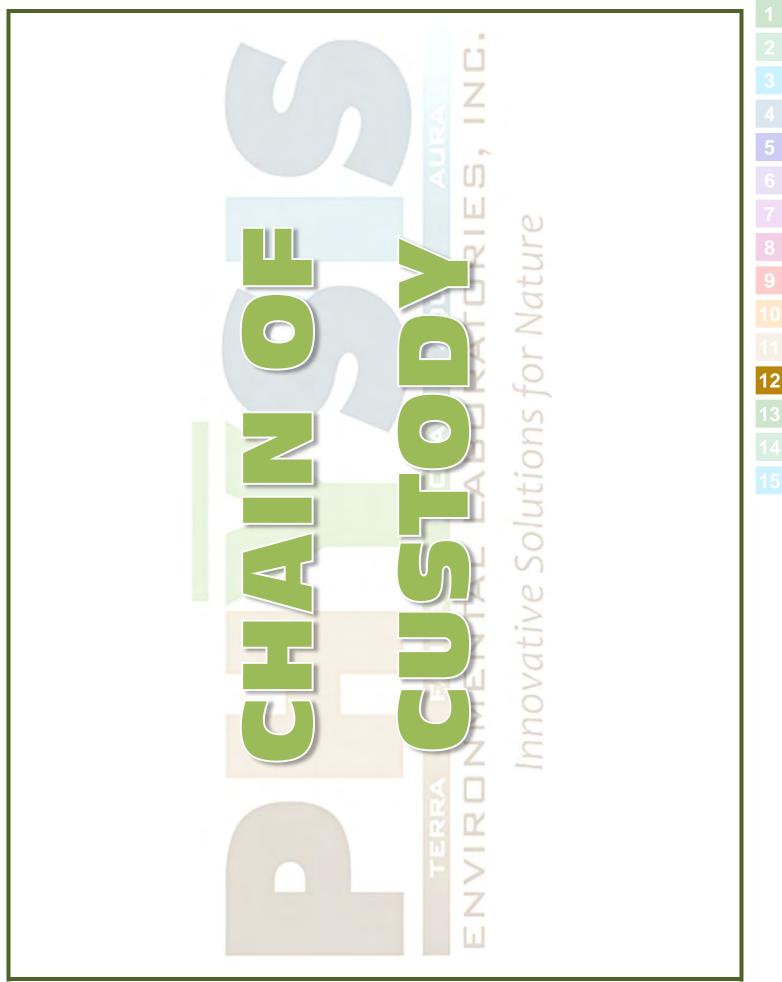




Innovative Solutions for Nature

| 19                   | 004 E. Wright Circle, Ana       | aheim CA 92806                            | main: (714) | 602-5320 | fax: (714) | 602-5321                                | www.p  | hysislabs.com                   | info@physislab             | bs.com CA ELAP #2769            |         |  |  |
|----------------------|---------------------------------|---|-------------|----------|------------|---|--------|---------------------------------|----------------------------|---------------------------------|---------|--|--|
|                      | Pyrethro                        | ids                                       |             |          |            |   |        | QUAI                            | ITY CONT                   | ROL REPOR                       | Г       |  |  |
| ANALYTE              | FRACT                           | TION RESULT                               | MDL         | RL       | UNITS      | SPIKE                                   | SOURCE | E ACO                           | CURACY                     | PRECISION                       | QA CODE |  |  |
| l                    |                                 |   |             |          |            | LEVEL                                   | RESULT | ۲ %                             | LIMITS                     | % LIMITS                        |         |  |  |
| Sample               | e ID: 64994-B1                  | QAQC Procedur<br>Method: EPA 625-N        |             |          |            | <b>: DI Water</b><br>): 0-23070         |        | Sampled:<br>Prepared: 03        | 3-Jul-19                   | Received:<br>Analyzed: 17-Jul-1 | 9       |  |  |
| Pyrethrins           | Tota                            | I ND                                      | 100         | 200      | ng/L       |   |        |                                 |                            |                                 |         |  |  |
| Sample<br>Pyrethrins | e <b>ID: 64994-BS</b> 1<br>Tota | QAQC Procedur<br>Method: EPA 625-N<br>500 |             | 200      |            | <b>c: DI Water</b><br>D: 0-23070<br>500 | 0      | Sampled:<br>Prepared: 03<br>100 | 3-Jul-19<br>50 - 150% PASS | Received:<br>Analyzed: 18-Jul-  | 19      |  |  |
|                      | e ID: 64994-BS2                 | QAQC Procedur<br>Method: EPA 625-N        | ICI         |          |            | <b>:: DI Water</b><br>D: 0-23070        |        | Sampled:<br>Prepared: 03        |                            | Received:<br>Analyzed: 18-Jul-  | 19      |  |  |
| Pyrethrins           | Tota                            | l 519                                     | 100         | 200      | ng/L       | 500                                     | 0      | 104                             | 50 - 150% PASS             | 4 30 PASS                       |         |  |  |

qcb - 1 of 1



| 06/25         BUTCH (440-245042-1)         61/25/19         Pacific<br>DB/15         Water         X         I           06/25         BUTCH DUP (440-245042-3)         61/25/19         Pacific<br>DB/15         Water         X         I  | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/26/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-7)     6/27/19       STREAMS (440-245042-7)     6/27/19       Stroe laboratory accreditations are subject to change. Test/america Laboratories, Inc., places the on thy maintain accreditations are current to date, return the sign analysis/sets/main/sit/sets/main/sets/main/sit/sets/main/sit/sets/main/sets/main/sit/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/sets/main/s  | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       Stree laborationy accreditations are subject to change. Test/merica Laboratories, inc. places the other managements accreditations are current to date, return the sign other strength in requested accreditations are current to date, return the sign other strength in the strength in the sign other strength in the sign other strength in the strength in the sign other strength in the stren  | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       CHER (440-245042-7)     6/27/19       STREAMS (440-245042-7)     6/27/19  | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19 <t< th=""><th>5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       Struct laboratory accreditations are subject to change. Test/merica Laboratories. Inc. places the only maintain accreditation in the State accreditations are current to date, return the sign drones. Inc. advisestematic being analyzed tories. Inc. advisestematic being analyzed tories. Inc. places the only maintain accreditation in the State accreditations are current to date, return the sign drones. Inc. advisestematic being analyzed tories. Inc. a</th><th>5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19    <t< th=""><th>5 BUTCH (440-245042-1)       6/25/19         5 BUTCH DUP (440-245042-3)       6/25/19         CHER (440-245042-4)       6/26/19         STREAMS (440-245042-5)       6/26/19         CHER (440-245042-6)       6/27/19         STREAMS (440-245042-7)       6/27/19         STREAMS (440-2450</th><th>5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       Stroe laboratory accreditations are subject to change. Test/America Laboratories, Inc. places the or bit matrian accreditation in the State of Origin listed above for analysis/stests/matrix being analyzed update. Inc. analysis/stests/matrix being analyzed update. Inc. analysis/stests/matrix being analyzed update.</th><th>5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       STREAMS (440-245042-7)     6/27/19</th><th>(2-3)</th><th>(2-3)</th><th>42-3)</th><th>2-1)<br/>45042-3)<br/>2-5)</th><th>(2-3)</th><th>45042-3)</th><th></th><th></th><th></th><th>Sample Identification - Client ID (Lab ID) Sample Date</th><th>site</th><th>Project Name:<br/>Project #:<br/>44022550</th><th>Email: WO#:</th><th>PO #</th><th>State, Zip:<br/>CA, 92806</th><th>City TAT Requested (days):<br/>Anaheim</th><th></th><th>Physis Environmental Laboratories</th><th>Shipping/Receiving<br/>Company</th><th>Client Information (Sub Contract Lab)</th><th></th></t<></th></t<> | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       Struct laboratory accreditations are subject to change. Test/merica Laboratories. Inc. places the only maintain accreditation in the State accreditations are current to date, return the sign drones. Inc. advisestematic being analyzed tories. Inc. advisestematic being analyzed tories. Inc. places the only maintain accreditation in the State accreditations are current to date, return the sign drones. Inc. advisestematic being analyzed tories. Inc. a   | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19 <t< th=""><th>5 BUTCH (440-245042-1)       6/25/19         5 BUTCH DUP (440-245042-3)       6/25/19         CHER (440-245042-4)       6/26/19         STREAMS (440-245042-5)       6/26/19         CHER (440-245042-6)       6/27/19         STREAMS (440-245042-7)       6/27/19         STREAMS (440-2450</th><th>5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       Stroe laboratory accreditations are subject to change. Test/America Laboratories, Inc. places the or bit matrian accreditation in the State of Origin listed above for analysis/stests/matrix being analyzed update. Inc. analysis/stests/matrix being analyzed update. Inc. analysis/stests/matrix being analyzed update.</th><th>5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       STREAMS (440-245042-7)     6/27/19</th><th>(2-3)</th><th>(2-3)</th><th>42-3)</th><th>2-1)<br/>45042-3)<br/>2-5)</th><th>(2-3)</th><th>45042-3)</th><th></th><th></th><th></th><th>Sample Identification - Client ID (Lab ID) Sample Date</th><th>site</th><th>Project Name:<br/>Project #:<br/>44022550</th><th>Email: WO#:</th><th>PO #</th><th>State, Zip:<br/>CA, 92806</th><th>City TAT Requested (days):<br/>Anaheim</th><th></th><th>Physis Environmental Laboratories</th><th>Shipping/Receiving<br/>Company</th><th>Client Information (Sub Contract Lab)</th><th></th></t<> | 5 BUTCH (440-245042-1)       6/25/19         5 BUTCH DUP (440-245042-3)       6/25/19         CHER (440-245042-4)       6/26/19         STREAMS (440-245042-5)       6/26/19         CHER (440-245042-6)       6/27/19         STREAMS (440-245042-7)       6/27/19         STREAMS (440-2450   | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       Stroe laboratory accreditations are subject to change. Test/America Laboratories, Inc. places the or bit matrian accreditation in the State of Origin listed above for analysis/stests/matrix being analyzed update. Inc. analysis/stests/matrix being analyzed update. Inc. analysis/stests/matrix being analyzed update.   | 5     BUTCH (440-245042-1)     6/25/19       5     BUTCH DUP (440-245042-3)     6/25/19       CHER (440-245042-4)     6/26/19       STREAMS (440-245042-5)     6/26/19       CHER (440-245042-6)     6/27/19       STREAMS (440-245042-7)     6/27/19       STREAMS (440-245042-7)     6/27/19 | (2-3)  | (2-3)   | 42-3)   | 2-1)<br>45042-3)<br>2-5)  | (2-3)   | 45042-3)                    |         |                         |                            | Sample Identification - Client ID (Lab ID) Sample Date                            | site           | Project Name:<br>Project #:<br>44022550            | Email: WO#: | PO #  | State, Zip:<br>CA, 92806 | City TAT Requested (days):<br>Anaheim |                             | Physis Environmental Laboratories                                 | Shipping/Receiving<br>Company  | Client Information (Sub Contract Lab) |   |
|--|--|--|---|---|---|--|--|--|--|--|---|---|---|---|-----------------------------|---------|-------------------------|----------------------------|---|----------------|--|-------------|---|--------------------------|---------------------------------------|-----------------------------|---|--------------------------------|---------------------------------------|---|
| Pacific<br>08:15<br>Pacific<br>06:06<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:27<br>Pacific<br>06:27<br>Pacific<br>06:27<br>Pacific<br>06:28<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pacific<br>07<br>Pac<br>Pacific<br>07<br>Pacific<br>07<br>Pac<br>Pac<br>Pac<br>Pac<br>Pac<br>Pac<br>Pacific<br>Pac<br>P  | Pacific<br>06:06<br>Pacific<br>06:06<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:04<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06:05<br>Pacific<br>06 | Pacific<br>Pacific<br>06:06<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:23<br>Pacific<br>06:23<br>Pacific<br>06:23<br>Pacific<br>06:05<br>06:05<br>Pacific<br>06:05<br>06:05<br>Pacific<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>06:05<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>0 | Pacific<br>08:15<br>Pacific<br>06:09<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:23<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pac<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>Pacific<br>10<br>Pacific<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10 | Pacific<br>Pacific<br>06:06<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:21<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:21<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pac<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pacific<br>2<br>Pac<br>2<br>Pacific<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac<br>2<br>Pac   | Pacific<br>Pacific<br>06:06<br>06:19<br>Pacific<br>06:09<br>Pacific<br>06:21<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>06:25<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pacific<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac<br>10<br>Pac | Pacific<br>Pacific<br>06:06<br>06:19<br>Pacific<br>06:09<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pa   | Pacific<br>Pacific<br>06:06<br>06:19<br>Pacific<br>06:09<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:21<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pa | Pacific<br>Pacific<br>06:06<br>06:07<br>06:17<br>06:19<br>06:09<br>06:09<br>Pacific<br>06:27<br>Pacific<br>06:27<br>Pacific<br>06:27<br>Pacific<br>06:28<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:39<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacific<br>06:30<br>Pacifi | Pacific<br>Pacific<br>06:06<br>Pacific<br>06:09<br>Pacific<br>06:09<br>Pacific<br>06:22<br>Pacific<br>06:22  | Pacific<br>Pacific<br>06:06<br>Pacific<br>06:19<br>Pacific<br>06:19<br>Pacific<br>06:09<br>Pacific<br>06:22<br>Pacific<br>06:22<br>Pacific | Pacific<br>08:15<br>Pacific<br>06:06<br>Pacific<br>06:19<br>Pacific<br>06:09<br>Pacific<br>06:22<br>Pacific | Pacific<br>08:15<br>Pacific<br>06:06<br>Pacific<br>06:19<br>Pacific<br>06:09<br>Pacific | Pacific<br>08:15<br>Pacific<br>06:06<br>Pacific<br>06:19<br>Pacific | Pacific<br>08:15<br>Pacific<br>06:06<br>Pacific | Pacific<br>08:15<br>Pacific | Pacific | 08:15                   | 1                          | Sample (C<br>Time G   |                |  |             |   |                          | days):                                | sted:                       |   |                                |                                       | Chain o                                   |
| Company<br>Company<br>Company  | Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>the shipped back to the<br>dy attesting to said company<br>Company   | A analyte & accreditation<br>(), analyte & accreditation<br>to eshipped back to the<br>dy attesting to said company<br>Company<br>A 12   | Vater<br>Water<br>Water<br>Water<br>Water<br>to e shipped back to the<br>dy attesting to said com   | vater<br>Water<br>Water<br>Water<br>Water<br>Water<br>te shipped back to the<br>dy attesting to said com  | Vater<br>Water<br>Water<br>Water<br>Water<br>Water<br>te shipped back to the<br>dy attesting to said com  | Vater<br>Water<br>Water<br>Water<br>Water<br>Water<br>Vwater<br>te shipped back to the<br>dy attesting to said com   | , analyte & accreditation<br>to shipped back to the<br>dy attesting to said com  | Vater<br>Water<br>Water<br>Water<br>Water<br>Vater<br>to shipped back to the<br>dy attesting to said com   | Water<br>Water<br>Water<br>Water<br>Water<br>Water   | Water<br>Water<br>Water<br>Water<br>Water<br>Water   | Water<br>Water<br>Water<br>Water<br>Water   | Water<br>Water<br>Water<br>Water<br>Water   | Water<br>Water<br>Water<br>Water                                    | Water<br>Water<br>Water                         | Water<br>Water              | Water   | A ALAN THE THE PARTY OF | 1 10                       | Sample Matrix<br>Type (www.ater,<br>(C=comp, c=wassied,<br>G=grab) BT=Tesue, A=A4 |                |  |             |   |                          |                                       |                             |   | le:                            | 05                                    | 1863 art -cord<br>Chain of Custody Record |
| Image: second constraints     Image: second constraints       Image: second constraints     Image: second constraints <td>Image: Provide and the second sec</td> <td>Intervencia la compliance upon out a<br/>Compliance upon out a<br/>Tesumenca la contact a<br/>Sample Disponenta<br/>Special Instructor<br/>Peccived by:</td> <td>Image: Second Second</td> <td>Compliance upon out a     Compliance upon out a     Compliance to TestAmenica     Compliance to TestAmenica</td> <td>Compliance upon out s     TestAmenica laboration     Sample Dispo</td> <td>Sample Dispo</td> <td>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X</td> <td>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X<br/>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>XP</td> <td>XP</td> <td>Xp</td> <td>P</td> <td>ield Filtered S<br/>erform MS/M<br/>UB (Pyrethrins</td> <td>SD (Ye</td> <td>s or N</td> <td></td> <td></td> <td></td> <td></td> <td>Control Indiana Control Ind</td> <td>Accreditations Required (See note):<br/>State Program - California</td> <td>E-Mail:<br/>ena.davidkova@test</td> <td>Lab PM;<br/>Davidkova, Lena</td> <td>4-004<br/>Record</td> | Image: Provide and the second sec   | Intervencia la compliance upon out a<br>Compliance upon out a<br>Tesumenca la contact a<br>Sample Disponenta<br>Special Instructor<br>Peccived by:   | Image: Second   | Compliance upon out a     Compliance upon out a     Compliance to TestAmenica   | Compliance upon out s     TestAmenica laboration     Sample Dispo   | Sample Dispo   | X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X  | X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X<br>X  |  |  |   |   |   |   | XP                          | XP      | Xp                      | P                          | ield Filtered S<br>erform MS/M<br>UB (Pyrethrins                                  | SD (Ye         | s or N   |             |   |                          |                                       | Control Indiana Control Ind | Accreditations Required (See note):<br>State Program - California | E-Mail:<br>ena.davidkova@test  | Lab PM;<br>Davidkova, Lena            | 4-004<br>Record                           |
| Received by:     Received by:     Received by:   | Atval WA   | al ( A fee may be a cons/OC Requirement  | boontract laboratories. 1<br>or other instructions will u<br>Laboratories, Inc.<br>al ( A fee may be a<br>ons/OC Requirement  | al ( A fee may be a nons/QC Requirement   | boottract laboratories, 1<br>or other instructions will u<br>Laboratories, Inc.   | boottract laboratories, 1<br>or other instructions will t<br>Laboratories, Inc.  | al ( A fee may be a  | Laboratories, Inc.   |  |  |   |   |   |   |                             |         |                         |                            |   |                |  |             |   |                          | Analysis R                            | Comornia                    | red (See note);<br>California                                     | americainc.com                 |                                       |   |
|  | This sample shipment is be provided. Any change seesed if sample lisposal By Lab hts:  | This sample shipment is be provided. Any change see of it sample shipment is see seesed if sample seeses of the sample sets of the sample   | his sample shipment is<br>be provided. Any changle<br>ssessed if sample<br>bisposal By Lab<br>ths:  | This sample shipment is be provided. Any change seessed if sample lisposal By Lab hts:  | This sample shipment is<br>be provided. Any chang<br>ssessed if sample<br>lisposal By Lab   | his sample shipment is<br>be provided. Any change<br>ssessed if sample   | Provided Any change  | his sample shipment ta   |  |  |   |   |   |   |                             |         |                         |                            |   |                |  |             |   |                          | Requested                             |                             |   | State of Origin:<br>California | Carrier Tracking No(s):               |   |
|  | s are retained long<br>Archive For<br>me:  | int<br>are retained long<br>Archive For<br>Archive For   | s are retained long   | s are retained long   | s are retained long   | s are retained long  | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2  | 2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2  | <u> </u>   | N N N N N N  | N N N N N X   | 2 2 2 2 2   | N N N N   | N N N X   | N 22 X                      | 2 X     | X                       |                            | otal Number o   | and the second | 1111 Mar. 1  | H-A         | G-1   |                          | A-HCL                                 | 440                         | Job #   | Page                           |                                       | -   |
| fcustody. If the laboratory does<br>s should be brought to TestAmeri<br>ger than 1 month<br>Company<br>Company   | ger than 1 month)<br>Company   | ger than 1 months  | rf-custody. If the laboratory does no<br>s should be brought to TestAmerica<br>ger than 1 month)  | Image: Shipment is forwarded under chain-of-custody. If the laboratory does not be provided. Any charges to accreditation status should be brought to TestAmerica       assessed if samples are retained longer than 1 month)       Disposal By Lab     Image: Archive For Months   | rfcustody. If the laboratory does no<br>should be brought to TestAmerica<br>ger than 1 month)   | f-custody. If the laboratory does no<br>should be brought to TestAmerica<br>ger than 1 month)  | foustody. If the laboratory does no should be brought to TestAmerica   | -foustody. If the laboratory does no   |  |  |   |   |   |   |                             |         |                         | opecial histractions/Note: |   |                | K - EDTA W - pH 4-5<br>L - EDA Z - other (specify) | Acid        | F - MeOH R - Na2S203<br>G - Amchior S - H2S04 | cu<br>Cu                 | Cod                                   | 440-245042-1                | · 并   | Page:<br>Page 1 of 1           | COC No:<br>440-140707.1               |   |



1803004-004

# Sample Receipt Summary

| Client: TestAmerica                          | Date Received: | 7/3/2019 Received E | By: RGH Inspected By: RGH |  |  |  |  |  |  |  |
|--|----------------|---------------------|---------------------------|--|--|--|--|--|--|--|
| Courier:                                     | Cool           | er:                 | Temperature:              |  |  |  |  |  |  |  |
| 🗌 Physis 🖌 FEDEX 🗌 UPS 🔲 Client              | ✔ Cooler 🗌 Box | Total #: 1          | □ BLUE 🖌 WET □ DRY        |  |  |  |  |  |  |  |
| Start End Other:                             | Other:         |                     | ☐ None 0.3°C              |  |  |  |  |  |  |  |
| Sample Integrity Upon Receipt:               |                |                     |                           |  |  |  |  |  |  |  |
| 1. COC(s) included and completely filled out |                |                     |                           |  |  |  |  |  |  |  |
|  |                |                     |                           |  |  |  |  |  |  |  |

Notes:

Sample ID(s) 06 25 BUTCH (440-245042-1), 06 25 BUTCH DUP (440-245042-3) were received on the 8th day of HT.

12



July 30, 2019

Lena Davidkova TestAmerica 17461 Derian Avenue Suite 100 Irvine, CA 92614-

Project Name:Ocean Disposal WW Sample 44022550Physis Project ID:1803004-005

Dear Lena,

Enclosed are the analytical results for the sample submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 7/5/2019. A total of 1 sample was received for analysis in accordance with the attached chain of custody (COC). Per the COC, the sample was analyzed for:

Organics

Pyrethrins 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 714 602-5320 Extension 202 mistymercier@physislabs.com



# **PROJECT SAMPLE LIST**

| TestAmerica                         | PHYSIS Project ID: 1803004-005 |                  |      |        |  |  |  |  |
|-------------------------------------|--------------------------------|------------------|------|--------|--|--|--|--|
| Ocean Disposal WW Sample 44022550   |                                | Total Samples: 1 |      |        |  |  |  |  |
| PHYSIS ID Sample ID                 | Description                    | Date             | Time | Matrix |  |  |  |  |
| 65064 6 25 OD STREAMS (440-245042-2 |                                | 6/25/2019        | 8:24 | Liguid |  |  |  |  |

i - 2 of 6

(714) 602-5320 fax (714) 602-5321 Page 74 of 99



# **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                  |

i - 3 of 6

(714) 602-5320 fax (714) 602-5321 Page 75 of 99



# 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

i - 4 of 6



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.

i - 5 of 6

(714) 602-5320 fax (714) 602-5321 Page 77 of 99



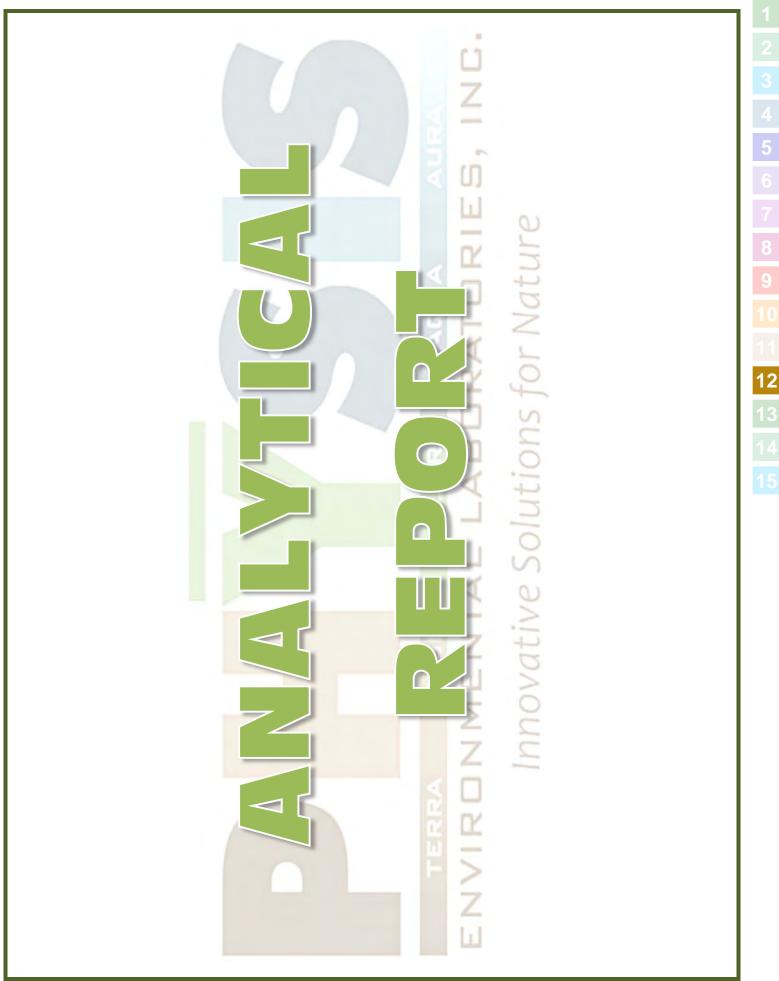
# PHYSIS QUALIFIER CODES

| 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<br>limits due to matrix interference. The associated B/BS were within limits,<br>therefore the sample data was reported without further clarification  |
| SH   | analyte concentration in the project sample exceeded the spike<br>concentration, therefore accuracy and/or precision acceptance limits do<br>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<br>readily achieved using routine laboratory practices, therefore accuracy<br>and/or precision acceptance limits do not apply  |
| Q    | analyte was outside the specified QAPP acceptance limits for precision<br>and/or accuracy but within Physis derived acceptance limits, therefore the<br>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 |

i - 6 of 6

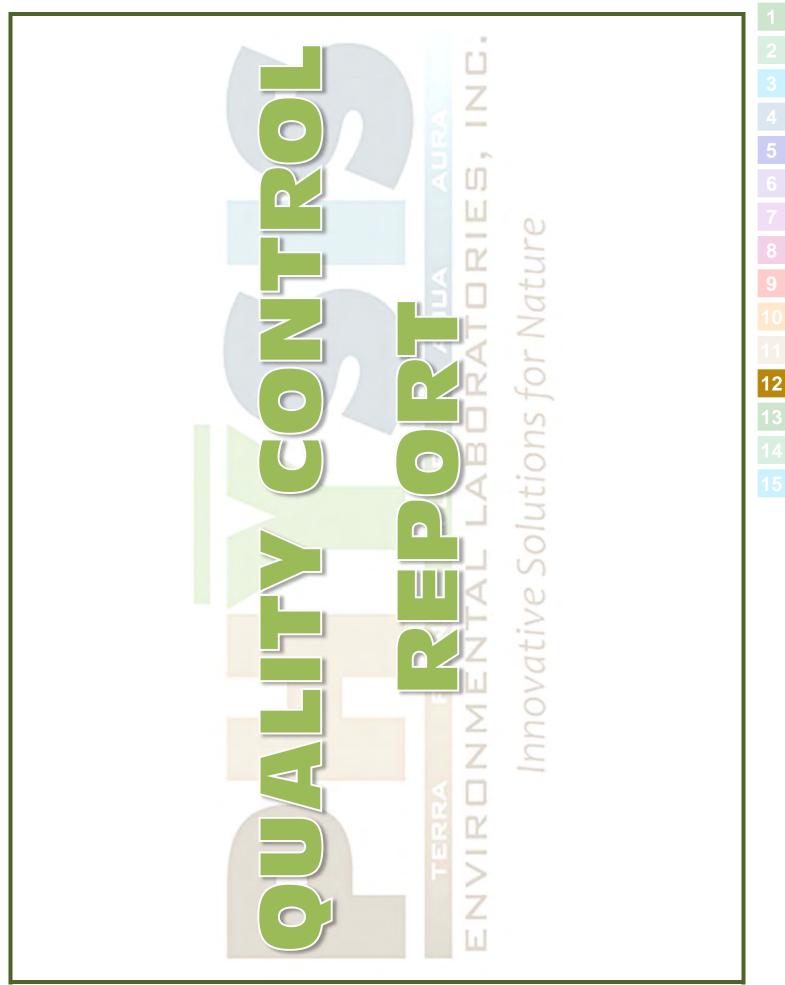
(714) 602-5320 fax (714) 602-5321 Page 78 of 99

www.physislabs.com





|                     |                 |             | P      | yrethroid      | S  |          |           |          |                |               |
|---------------------|-----------------|-------------|--------|----------------|----|----------|-----------|----------|----------------|---------------|
| ANALYTE             | Method          | Units       | RESUL  | T MDL          | RL | Fraction | QA CODE   | Batch ID | Date Processed | Date Analyzed |
|                     |                 |             |        |                |    |          |           |          |                |               |
| Sample ID: 65064-R1 | 06 25 OD STREAM | NS (440-245 | 042-2) | Matrix: Liquid |    | Sampled: | 25-Jun-19 | 8:24     | Received: 05   | -Jul-19       |

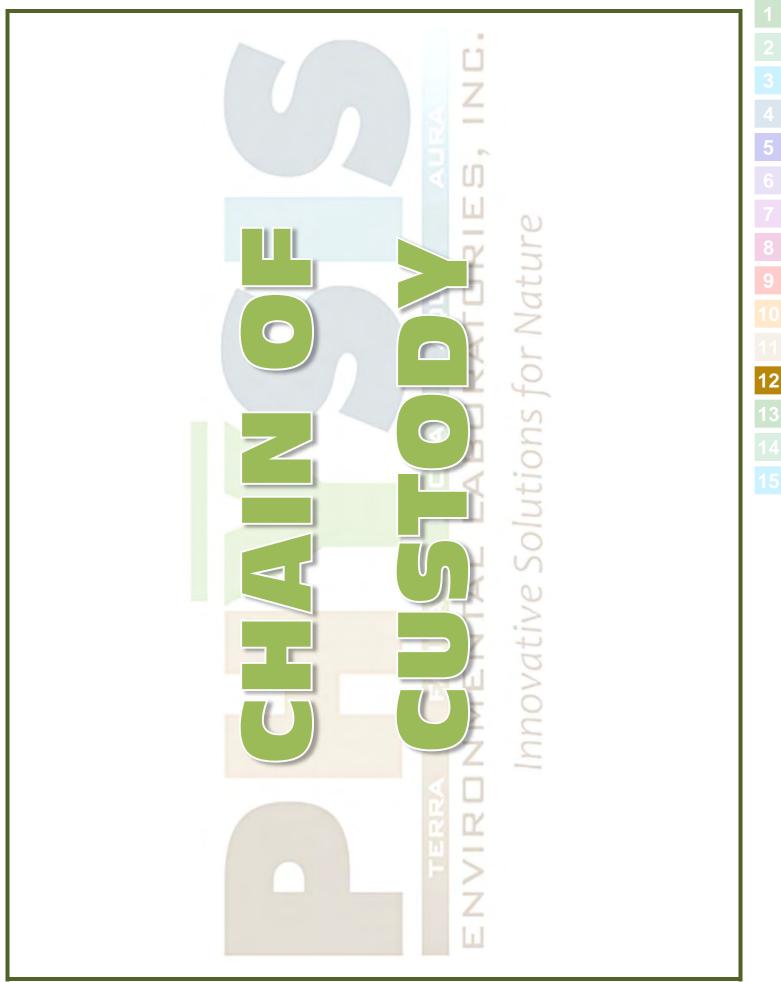




Innovative Solutions for Nature

| 1          | 1904 E. Wright Circle, Ana | heim CA 92806                        | main: (714) 6 | 02-5320 | fax: (714) | 602-5321                        | www.p  | hysislabs.com           | info@physislab: | s.com CA ELAP #276               | 9       |
|------------|----------------------------|--------------------------------------|---------------|---------|------------|---------------------------------|--------|-------------------------|-----------------|----------------------------------|---------|
|            | Pyrethro                   | ids                                  |               |         |            |                                 |        | QUA                     | LITY CONT       | ROL REPOR                        | Г       |
| ANALYTE    | FRACT                      | ION RESULT                           | MDL           | RL      | UNITS      | SPIKE                           | SOURCE | E AC                    | CURACY          | PRECISION                        | QA CODE |
| l          |                            |                                      |               |         |            | LEVEL                           | RESULT | - %                     | LIMITS          | % LIMITS                         |         |
| Samp       | le ID: 65063-B1            | QAQC Procedura<br>Method: EPA 625-No |               |         |            | : DI Water                      |        | Sampled:<br>Prepared: 0 | 03-Jul-19       | Received:<br>Analyzed: 17-Jul-19 | 9       |
| Pyrethrins | Total                      | ND                                   | 100           | 200     | ng/L       |                                 |        |                         |                 |                                  |         |
|            | le ID: 65063-BS1           | QAQC Procedura<br>Method: EPA 625-N  | CI            |         |            | <b>: DI Water</b><br>D: O-23070 |        | Sampled:<br>Prepared: 0 |                 | Received:<br>Analyzed: 18-Jul-1  | 9       |
| Pyrethrins | Total                      | 500                                  | 100           | 200     | ng/L       | 500                             | 0      | 100                     | 50 - 150% PASS  |                                  |         |
| Samp       | le ID: 65063-BS2           | QAQC Procedura<br>Method: EPA 625-N  |               |         |            | <b>: DI Water</b><br>): 0-23070 |        | Sampled:<br>Prepared: 0 | 03-Jul-19       | Received:<br>Analyzed: 18-Jul-1  | 9       |
| Pyrethrins | Total                      | 519                                  | 100           | 200     | ng/L       | 500                             | 0      | 104                     | 50 - 150% PASS  | 4 30 PASS                        |         |

qcb - 1 of 1





1803004-005

# Sample Receipt Summary

| Client: TestAmerica  | Date Received:   | 7/5/2019 Received E | By: MM Inspected By: RGH                               |
|--|--|---------------------|--|
| Courier:   | Cou  | oler:               | Temperature:   |
| 🗌 Physis 🗌 FEDEX 🗌 UPS 🖌 Client  | ✓ Cooler 🗌 Box   | Total #: 1          | □ BLUE ✔ WET □ DRY                                     |
| Start End Other:   | Other:   |                     | None 2°C   |
|  | Sample Integrity Upc   | on Receipt:         |  |
| <ol> <li>COC(s) included and completely filled of</li> <li>All sample containers arrived intact</li> <li>All samples listed on COC(s) are presered.</li> <li>Information on containers consistent of</li> <li>Correct containers and volume for all a</li> <li>All samples received within method how</li> <li>Correct preservation used for all analyse</li> <li>Name of sampler included on COC(s).</li> </ol> | nt<br>with information on CO<br>inalyses indicated<br>olding time<br>ses indicated | C(s)                | Yes<br>Yes<br>Yes<br>Yes<br>No; see notes below<br>Yes |
|  | Notes:   |                     |  |

Sample ID(s) 06 25 OD STREAMS (440-245042-2) received on the 10th day (7 day HT).

1 2 3 4 5 6 12

| - curolins  | COC No:<br>440-163988-29891.1             |  | ******        | 3  | A - HCL<br>B - NeOH<br>C - Zn Acetete |  | F - MeOH R - Na2S203<br>G - Amchlor S - H2SO4<br>H - Ascorbic Acid T - TSP Dodecentychate | I - Ice<br>J - DI Water  | -  | Off tro                     | Total Number<br>Special Instructions/Note  |             |                 |                          |              |       |                        |                     | ot Cu |          |                      | 0-5420 | 1 month)                  | Archive For Months                                     |                            | Company      | 9 1010 COMPANY RV |                            | 8/202 20:0/20.6  | 1<br>2<br>3<br>4<br>5<br>6 |
|---|---|--|---------------|--|---------------------------------------|--|---|--|--|-----------------------------|--|-------------|-----------------|--------------------------|--------------|-------|------------------------|---------------------|-------|----------|----------------------|--------|---------------------------|--|----------------------------|--------------|-------------------|----------------------------|--|----------------------------|
|   | Carrier Tracking No(s):                   | 1126 ONE 7910                              | tis Reguested |  |                                       |  | 9   |  | latoT ,  | abine,<br>îly<br>te, Tot    | 629-Bie(2-Edhyl-<br>650-CN_E - Cy<br>4600_CN_E - Cy<br>626-Pyrethine<br>8015-Pyrethine<br>362.2-Vitrates<br>362.2-Vitrates   | V B X N N S | XXXXXXX         | XXXXXXX                  | XXXXXXXX     |       | XXXXXXX                | XXXXXXX             |       | XXXXXXXX | XXXXXXX              |        | essed if samples are n    | oosal By Lab   | Method of Shipment:        | Date/Time    | Inelas Datertme.  | Date/f me.                 | 10ther Remarks 1 20,8  | 7<br>8<br>9<br>10          |
| Record  | ab PM* ********************************** | E-Mait<br>lena.davidkova@testamencainc.com | Analvsis      |  |                                       | 9 <b>7</b> WS '(                         | * 3W58<br>00-COL  | - 7470/<br>80114<br>801149<br>801149<br>801149<br>801149<br>801149<br>801149 | at the formation of the | tale, M<br>3-Phoi<br>3-Phoi | SS608 - AOCe<br>83608 - AOCe<br>83008 - Lotel Mel<br>900-Nitratee' SM<br>Purbouis<br>D0022 - Britr De<br>900-Nitratee' SM<br>900-Nitratee' SM<br>900-Nitra | <b>1</b>    | X<br>L          |                          |              |       | XXXXX                  | XXXXX               |       | XXXXX    |                      |        | Sample Disposal ( A fee m | Special Instructions/QC Requirements                   | L<br>Time:                 | Received by: | A Contraction     | 16di                       | 21.7121 J 8.61153 18.4   | 12<br>13<br>14             |
| Chain of Custody Record   | FINL LAN YUEN                             |  |               | Drie Date Requested:   | asted (deys):                         | S DAD                                    | PO #.<br>Purchase Order not required  |  | Project #:<br>44022550   | /#:                         | Sample<br>Time   | Preserve    | 08: IS          | 04/35/19 (08:34) C Water | 1            | Water | 6 24 19 36: 06 C Water | 26/19 66:19 C Water |       | -        | 627/19 66:22 C Water | Water  |                           | Unknown  | Date:                      |              | Time. Company     | Time. Company              | 20.9/206   |                            |
| 17461 D.:nan Ave Suite 100<br>Irvine, CA 92614-5817<br>Dhrine (449) 261-1022 Fax (949) 260-3297 | Sam                                       | Clent Contact: Phone.                      | Company:      | Geologyijet Contautania, inc.<br>Addres<br>Addres Lanary Blad Strike 200 |                                       | Watterioo<br>State, Zp:<br>CNN, ZIP: FE5 |   |  | Project Name.<br>Occean Disposal WW Sample 44022   |                             | samula Identification<br>Sam   |             | DLASS RUTCH CON | 25 OD STRAMS             | LOK RITCH NO |       | Butcher 6/2            | OD Streams 626      |       | Butaker  | 2 m B                |        |                           | <i>he</i> Skin Irritant Poison B<br>V, Other (specify) | Emoty Kit Relinquished by: |              | Relinquished by   | Reinquished by. Date/Time. | Custody Seals indic: Custody Seal No.: $D/U \in \Delta$ Yes $\Delta N_0$ |                            |

sunome .\*

| Phone (949) 261-1022 Fax (949) 260-3297                                      |  |                    |   |   |  |              |   |                                |  | 1   |          |
|--|--|--------------------|---|---|--|--------------|---|--------------------------------|--|---|----------|
| Client Information   | TWILLAN YUEN                               |                    | Lae.em.<br>Davidkova, Lena  |   |  | 5            | Carrier Iracking No(s)                          | No(s).                         | 440-16   | 440-163988-29891.1  |          |
| Client Contact:  |  | E-Mait:<br>Iena d  | E-Mail:<br>Jena davirikova@testamericainc.com-                      | astamerics  | tine.com-                                |              |   |                                | Page.<br>Page 1 of 1   | <b>1</b>  |          |
| Nick Bulson  |  |                    |   |   | L. Down                                  |              | ĺ,  |                                | Job #.   |   |          |
| Geosyntec Consultants, Inc.  |  |                    |   |   | Analysis                                 | Requested    | sted  |                                |  | 3,  |          |
| Address:<br>295 Hacrev Blvd Suite 290  | Due Date Requested:                        |                    | 3 D-  |   |  |              |   |                                | Preservation   | 000   |          |
| City<br>Mistarbo   | ested (d                                   |                    |   |   |  |              |   |                                | B NGO  | H N - Norte<br>Catate O - AshaO2                                  |          |
| Veterioo<br>State, Zp:<br>On Not 682   | T S DHYS                                   |                    | arms (  |   |  |              |   |                                |  |   |          |
| Phone:<br>Phone:<br>519-253(Tel)   | PO#<br>Purchase Order not required         |                    |   | 97 N S '  |  |              | a   |                                | G - Amethor<br>G - Amethor<br>H - Ascorteic Aci  | H R - Na25203<br>Nor S - H2SO4<br>thic Acid T - TSP Dodecehwdrate | hvdrate  |
| Email:<br>Inbutson@geosyntec.com   | W0#.                                       |                    | 400)<br>(604  | Solids  |  |              | ida1644   |                                |  | ,   |          |
| Project Name:<br>Ocean Disposal WW Sample                                    | Project #;<br>44022550                     |                    | 201 100<br>301990   | iatoT-i   |  | [BJO]        | a Kec   |                                |  |   | <u> </u> |
| Ste  |  |                    | ) Aysu<br>Al Ces  | 156408  |  |              |   |                                | of co  |   |          |
|  | Sample<br>Type<br>Sample (C=comp,<br>Tiono |                    | 21"3-11:(^) 382"<br>8021 - Bailt De<br>8021 - Bailt<br>1915 - Bailt | sinoma<br>8. astratos, 88<br>9105-7013                    | 52-BJ#(5-E4µÅ)<br>580B - AOC#            | 9944 - HEM O | olloneriq - 1.02<br>Ieblarmo <sup>-1</sup> -310 | 25-Pyrethrins<br>53.2-Vitrates | nedmoN liebo   |   |          |
| Sample Identification  |  | Preservation Code: | X   | ¢ z   | 8 4                                      | +            | ┥€  | 1.                             |  |   |          |
| 01. 35 R 1714  |  | Water              |   | K   | Ř  | XX           | $\mathbb{R}$                                    | X                              |  |   |          |
| K  | 8  | Water              | X   |   | Ø  | X            | B   | X                              |  |   | Ţ        |
| K RTCH   | 8  | Water              | X   | XX  |  | XX           | X   | X                              |  |   |          |
|  |  | Water              |   |   |  |              |   |                                |  |   | [        |
| Butcher  | 6 24 19 06:06 C                            | Water              | X<br>X  | (XX)  | XX                                       | XX           | メズ  | X<br>X                         |  |   |          |
| OD Streme  | 626/1966:19 C                              | Water              | х́<br>Х   | バイン   | XX                                       | X<br>X       | XX  | XX                             |  |   | kpg      |
|  |  | Water              |   |   |  |              |   |                                |  |   | 1500     |
| Butcher  | 2 60:90 61/LC 9                            | Water              | Ń   | XX  | N<br>X                                   | X<br>X       | X<br>X  | X<br>X                         |  |   |          |
| OD Streams   | 6/27/19 06:22 C                            | Water              | Â   | 쉿   | XXX                                      | X<br>X       | ×<br>×  | X<br>X                         |  |   |          |
|  |  | Water              |   |   |  |              |   |                                |  |   | +000     |
|  |  |                    |   |   |  |              |   |                                |  |   | 7-01     |
| Possible Hazard Identification   | oison R 🗍 I hknown 🗍 Radiotonical          |                    | Sample D  | lisposal (<br>um To Cli                                   | A fee may<br>ant                         | r be asser   | ssed if sa<br>sal By La                         | mples an                       | Sample Disposal ( A fee may be assessed if samples are retained longer<br>Return To Client Disposal By Lab | than  |          |
| Other (specify)  |  |                    | Special In  | Special Instructions/QC Requirements                      | QC Requi                                 | ements:      |   |                                |  |   | Τ        |
| Empty Kit Relinquished by:   | Date:                                      |                    | Time:   |   | 0  |              | Method of Shipment                              | Shipment                       |  |   | Γ        |
|  | 02.01 21/02                                | COMPANY            |   | d by.   |  |              |   | Detertime.                     | 19 095   | 5 CARRY   |          |
| Reinquished by.  | Date/Thme                                  | Company            | Received by   | d by  |  |              |   | Date/Time                      |  | Company   |          |
| Relinquished by  | Date/Time                                  | Company            | Received by   | dby   |  |              |   | Date Time                      |  | Company   |          |
| Custody Seals Intact: Custody Seal No.:<br><sup>Δ</sup> Yes Δ No FFC PX 7756 | 7746.0/18.7970                             |                    | Cooler  | Cooler Temperature(s) °C and Other Remarks<br>776 CLULANN | re(s) °C and Other Rem<br>775 CI LL JANA | ther Remark  | 6/4   | 24.9                           | 9/26.0   | 1. 1293   | Γ        |
|  |  | 15                 | <b>13</b><br>14   | 12  | 11                                       | 10           | ð   | 7                              | 5<br>6   | 2<br>3<br>4   | 1        |

°, curonns

Chain of Custody Record

ा"461 Derian Ave Suite 100 Irvin⊙, CA 92614-5817

.

7/31/2019 (Rev. 1)



fier printing this label:

Are printing under subset. 1. Use the Print button on this page to print your label to your laser or inkjet printer. 2. Fold the printed page along the horizontal line. 3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Design we system constructs your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, down of yous actual loss and file a timely claim.Limitations found in the current FedEx profit, altorized declare a higher value, pay an additional charge, documents your solue of the package, loss of sales, income interest, profit, altorized declared and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide. Warming: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not

Eurofins TestAmerica, Irvine 17461 Derian Ave Suite 100



| Client Information (Sub Contract Lab)        | Sampler,                         |                  |                            | Med deut  |                  |                |  |          | Carrier Tracking No(s)        | ng No(s): |              | COC No.                          |   |
|--|----------------------------------|------------------|----------------------------|---|------------------|----------------|--|----------|-------------------------------|-----------|--------------|----------------------------------|---|
|  |                                  |                  |                            | Dav   | Davidkova, Lena  | Lena           |  |          |                               |           |              | 440-140690.1                     |   |
| Client Contact:<br>Shipping/Receiving        | Phone.                           |                  |                            | E-Mail<br>lena.o                                | davidk           | ova@tes        | E-Mait<br>lena.davidkova@testamericainc.com                      | c.com    | State of Origin<br>California | ×         |              | Page 1 of 1                      |   |
| Company:<br>TestAmerica Laboratories, Inc.   |                                  |                  |                            |   | Accred           | Program        | Accreditations Required (See note)<br>State Program - California | ste);    |                               |           |              | Job #:<br>440-245042-1           |   |
| Address.<br>830 Riverside Parkway,           | Due Date Requested:<br>7/10/2019 | :p               |                            |   |                  |                | Ar   | alysis R | Analysis Requested            |           |              | Preservation Codes:              | ides:   |
| Cey.<br>West Sacramento                      | TAT Requested (days):            | iys):            |                            |   | and the          |                |  | -        |                               |           |              | B - NaOH<br>C - Zn Acetate       | M - Neme<br>N - None<br>O - AsNaO2                |
| Sale, 2.p<br>CA, 95605                       |                                  |                  |                            |   | Sker<br>I        | -              | -  | _        | _                             | _         |              | D - Nitric Acid<br>E - NaHSO4    | P - Na2045<br>Q - Na2503                          |
| Phone<br>916-373-5600(Tel) 916-372-1059(Fax) | PO#                              |                  |                            |   | (0               | _              | _  |          |                               |           |              | G - Amchlor<br>H - Ascorbic Acid | K - N325203<br>S - H2504<br>T - TSP Dodecahydrate |
| Email  | #OM                              |                  |                            |   | _                | otintin        |  |          | _                             | _         | 5            | _                                | U - Acetone<br>V - MCAA                           |
| Project Name<br>Ocean Disposal WW Sample     | Preject #<br>44022550            |                  |                            |   | _                | -sterlik       |  | -        |                               |           | nonisti      | K - EDTA<br>L - EDA              | W - pH 4-5<br>Z - other (specify)                 |
| Ste.   | SSOW                             |                  |                            |   |                  | 'uəbo          | -  |          | _                             | _         | 01 COL       | Other:                           |   |
| Samula Mantification - Ollant ID // ab ID)   | Samolo Dato                      | Sample           | Sample<br>Type<br>(C=comp, | Matrix<br>(normator,<br>Sensiti,<br>Orwantolol, | erform MSM motes | naiw kees Vite |  |          |                               | _         | nedmuN leto1 |                                  | Snorial Instructions/Note-                        |
|  | X                                | X                | -1. m                      | ion Code:                                       | 1                |                |  |          |                               |           | X            |                                  |   |
| 05 25 BUTCH (440-245042-1)                   | 6/25/19                          | 08:15<br>Pacific |                            | Water   | -                | ×              |  |          |                               |           | -            |                                  |   |
| 06 25 OD STREAMS (440-245042-2)              | 6/25/19                          | 08:24<br>Pacific |                            | Water   |                  | ×              |  |          |                               |           | -            |                                  |   |
| 06 25 BUTCH DUP (440-245042-3)               | 6/25/19                          | 08:15<br>Pacific |                            | Water   |                  | ×              |  |          |                               |           | 1            |                                  |   |
| BUTCHER (440-245042-4)                       | 6/26/19                          | 06:06<br>Pacific |                            | Water   |                  | ×              |  |          |                               | _         | -            |                                  |   |
| OD STREAMS (440-245042-5)                    | 6/26/19                          | 06:19<br>Pacific |                            | Water   |                  | ×              |  | _        |                               |           | 1            |                                  |   |
| BUTCHER (440-245042-6)                       | 6/27/19                          | 06:09<br>Pacific |                            | Water   |                  | ×              | -  |          |                               |           | -            |                                  |   |
| OD STREAMS (440-245042-7)                    | 6/27/19                          | 06:22<br>Pacific |                            | Water   |                  | ×              |  |          |                               |           | 1            |                                  |   |
|  |                                  |                  |                            |   |                  |                |  |          |                               |           | -            |                                  |   |
|  |                                  |                  |                            |   |                  |                |  |          |                               |           |              |                                  |   |

Months

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)
Return To Client Disposal By Lab Archive For Mont

Possible Hazard Identification

verable Re npty Kit Reli

in body iished by

confirmed

| Memod of Shipment<br>Memod of Shipment<br>Date Trane<br>Date Trane   | quested: I, II, III, IV, Other (specify) | Primary Deliverable Rank: 2 |         | Special Instructions/QC Requirements: |                     |        |                 |
|--|--|-----------------------------|---------|---------------------------------------|---------------------|--------|-----------------|
| 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2  | quished by:                              | , Date:                     | T       | v /                                   | lethod of Shipment. |        | V               |
| 2 Conject of Conject C | 1. Longell                               |                             | TAN 17  | MMM Mary                              | B 1/2/2             | 95     | 100/HAL         |
| Date/Time Company Received by Date/Time Date/T | l'anna 1                                 | Datertime / L               | Company | Careford W .                          | DateTrine           |        | Company         |
| 2000 Cooler Temperature(s) °C and Other Remarks 28°C 300 Total Total 2000 Tot |  | DateTtme.                   | Company | Received by                           | Date/Time.          |        | Company         |
| 5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14  | s Intact: Custody Seal No ::             | Spal                        |         | in a                                  | 2.8%                |        |                 |
| 6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14   |  |                             |         |                                       |                     |        | Ver: 01/16/2019 |
|  |  |                             |         | 10<br>11<br>12<br>13<br>14            |                     | 5<br>6 | 3               |

vished by

Eurofins TestAmerica, Irvine

Chain of Custody Record



| Phone         Phone           Inc.         Z2-1059(Fax)         Due Date Requested (days):           Z2-1059(Fax)         Do #         Z2-1059(Fax)           Z2-1059(Fax)         PO #         Z2-1059(Fax)           Z2-10         PO #         Z2-10           Z2-11         PO #         Z3-11           Z2-11         D3-15         Protein           Z2-11         C25/119         D3-15           Z2-11         D3-15         Protein           Z2-11         D3-15         Pacific           Z2-11         P3-15         Pacific           Z2-11         D3-15         Pacific  | Inc.         Team         Team <th< th=""><th>Client Information (Sub Contract Lab)</th><th>Sampler:</th><th></th><th></th><th>David</th><th>Lab PM<br/>Davidkova, Lena</th><th>eua</th><th></th><th>Carrier</th><th>Carrier Tracking No(s):</th><th>44</th><th>COC No:<br/>440-140690.1</th><th></th></th<>  | Client Information (Sub Contract Lab)                  | Sampler:                       |                  |                                       | David                                     | Lab PM<br>Davidkova, Lena | eua                           |                        | Carrier    | Carrier Tracking No(s): | 44           | COC No:<br>440-140690.1 |                                    |
|--|--|--|--------------------------------|------------------|---------------------------------------|---|---------------------------|-------------------------------|------------------------|------------|-------------------------|--------------|-------------------------|------------------------------------|
| Inc.         Inc.         Inc.         Page 1611           Inc.         2000 BM Requested         Analysis  | Inc.         Inc. <th< th=""><th>5</th><th>Phone:</th><th></th><th></th><th>E-M</th><th>ait.</th><th></th><th></th><th>State of</th><th>Origin:</th><th>Pa</th><th></th><th></th></th<>  | 5  | Phone:                         |                  |                                       | E-M                                       | ait.                      |                               |                        | State of   | Origin:                 | Pa           |                         |                                    |
| Поставлите полнати поставлите п   | Псилования         Дато Развили         Дато Развили </th <th>Shipping/Receiving</th> <th></th> <th></th> <th></th> <th>len</th> <th>a.davidko</th> <th>va@testame</th> <th>nicainc.com</th> <th>Califo</th> <th>nia</th> <th>Pa</th> <th>ige 1 of 1</th> <th></th>   | Shipping/Receiving                                     |                                |                  |                                       | len                                       | a.davidko                 | va@testame                    | nicainc.com            | Califo     | nia                     | Pa           | ige 1 of 1              |                                    |
| Image: line         Analysis Requested           Analysis requested         Analysis requested           Analysis         Analysis requested           Analysis requested         Analysis requested           Analysis reqreqred         An   | monotest         Analysis         Reconstruct           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011         1/10/2011         1/10/2011         1/10/2011           1/10/2011  | Company.<br>TestAmerica Laboratories, Inc.             |                                |                  |                                       |   | State P                   | tions Required<br>ogram - Cal | (See note):<br>Ifornia |            |                         | 100          | 0-245042-1              |                                    |
| Int Requested (days);  | Int Revense ( farpit)         Int Revense ( farpit)         Interest ( farpit)         I  | Address<br>BBD Riverside Parkway,                      | Due Date Requeste<br>7/10/2019 | :9               |                                       |   |                           |                               | Analysis               | s Requeste | p                       | Pre          | eservation Code         | :50                                |
| 22-1058(Fax)         D0#         D1#         D2         D2 <thd2< th="">         D2         D2</thd2<>  | 1         Constrained<br>(Constrained)         Constrained<br>(Constrained)         Constrained<br>(Constrained)         Constrained<br>(Constrained)           2         1  | Cey.<br>West Sacramento                                | TAT Requested (da              | ys):             |                                       |   | 1943                      |                               |                        |            |                         | ¢ m ù        | - NaOH<br>- Zn Acetate  | N - None<br>N - None<br>O - AsNaO2 |
| C2-1050(Fax)         FO at<br>NO at<br>NO at<br>NO at<br>Au022550         Pont at<br>NO at<br>Au022550         Contract at<br>NO at<br>Au022550         Contract at<br>No at<br>Au022550         Contract at<br>Au025550         Contract at<br>Au0555   | Policy     Policy     Commission       2:1056/Fax)     nois     nois       0     nois     nois       0     nois     sample       0     sample     nois       1     nois     sample       1     nois     nois       1     <   | State, Zp.<br>CA, 95605                                |                                |                  |                                       |   |                           |                               |                        |            |                         |              |                         | P - Na2045<br>Q - Na2503           |
| MOR         More         I-to More           6         Properta         I-to More           6         Sample         Matrix           7         More         Sample           7         More         I-to More           7         More         I-to More           7         More         I-to More           7         More         X           7         More         X           7         More         X           7         More         X           8         Prosentation Code         Mater           1         More         X           2-1)         Er25/19         06/15           96/15         Mater         X           1         1         1           1         1         1           1         1         1           1         1         1           1         1         1           1 <td>00         00.8           00         Pignot 8        </td> <td>73-5600(Tel)</td> <td>PO #:</td> <td></td> <td></td> <td></td> <td>(4</td> <td></td> <td></td> <td>_</td> <td></td> <td>ioi</td> <td>2</td> <td>S - H2SOA<br/>T - TSP Dode</td>  | 00         00.8           00         Pignot 8  | 73-5600(Tel)   | PO #:                          |                  |                                       |   | (4                        |                               |                        | _          |                         | ioi          | 2                       | S - H2SOA<br>T - TSP Dode          |
| Interest         Autor20560         Autor20550         Autor20570         Autor2057  | Weiter Human         Topola         Product  | Email  | WO#                            |                  |                                       |   |                           | OSIJIN                        | -                      | _          |                         |              |                         | U - Acetone<br>V - MCAA            |
| SSOVML           SSOVML           Sample         Matrix         Sample  | Office         SSOOM         SSOOM <t< td=""><td>Project Name.<br/>Ocean Disposal WW Sample</td><td>Project #<br/>44022550</td><td></td><td></td><td></td><td></td><td>esergin</td><td></td><td></td><td></td><td>_</td><td></td><td>W - pH 4-5<br/>Z - other (sper</td></t<>  | Project Name.<br>Ocean Disposal WW Sample              | Project #<br>44022550          |                  |                                       |   |                           | esergin                       |                        |            |                         | _            |                         | W - pH 4-5<br>Z - other (sper      |
| Iert ID (Lab ID)         Sample (www.<br>Type         Matrix<br>(www.<br>construct.         Matrix<br>Type         Matrix<br>(www.<br>construct.         Matrix<br>File         Matrix<br>(www.<br>construct.         Matrix<br>File         Matrix<br>(construct.         Matrix<br>File         Matrix         File         File   | Rample Identification - Client ID (Lab ID)         Sample Value         Matrix<br>Type<br>weak         Sample<br>weak         Rample<br>Type<br>weak         Rample<br>weak         Rample<br>Type<br>weak         Sample<br>weak         Rample<br>Type<br>weak         Sample<br>weak         Rample<br>Type<br>weak         Sample<br>weak         Rample<br>weak  | Sate   | SSOME                          |                  |                                       |   |                           | 'uəBo                         |                        |            |                         | _            | ter:                    |                                    |
| 2-1 $2-1$ <t< td=""><td>6 25 BUTCH (440-245042-1)         Control         Preservation Code.         Nater         X         Image: Control         Nater         X         Image: Control         Nater         Y         Image: Control         Nater         Nater         Y         Image: Control         Nater         Nater         Y         Image: Control         Nater         &lt;</td><td>Sample Identification - Client ID (Lab ID)</td><td>Sample Date</td><td>Sample</td><td>Sample<br/>Type<br/>(C=comp,<br/>G=grab)</td><td>Matrix<br/>(www.mr.<br/>Second.<br/>Creased.</td><td>Field Filtered</td><td>123.2_Pros/ Nitr</td><td>_</td><td></td><td></td><td>Total Number</td><td>Special Ins</td><td>structions/N</td></t<> | 6 25 BUTCH (440-245042-1)         Control         Preservation Code.         Nater         X         Image: Control         Nater         X         Image: Control         Nater         Y         Image: Control         Nater         Nater         Y         Image: Control         Nater         Nater         Y         Image: Control         Nater         <  | Sample Identification - Client ID (Lab ID)             | Sample Date                    | Sample           | Sample<br>Type<br>(C=comp,<br>G=grab) | Matrix<br>(www.mr.<br>Second.<br>Creased. | Field Filtered            | 123.2_Pros/ Nitr              | _                      |            |                         | Total Number | Special Ins             | structions/N                       |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  | 6.25 BUTCH (440-245042-1)       6/25/19       08.15       Water       X       1       1       1         6.25 OD STREAMS (440-245042-2)       6/25/19       08.15       Water       X       1       1       1         6.25 UD STREAMS (440-245042-3)       6/25/19       08.15       Water       X       1       1       1         10.TCHER (440-245042-5)       6/26/19       08.15       Water       X       1       1       1         10.TCHER (440-245042-5)       6/26/19       08.15       Water       X       1       1       1       1         10.TCHER (440-245042-5)       6/26/19       08.15       Water       X       1 <td></td> <td>X</td> <td>X</td> <td>Preserva</td> <td>tion Code:</td> <td>X</td> <td></td> <td></td> <td>1</td> <td>1 1 1 1 1 1</td> <td>X</td> <td></td> <td>I</td>   |  | X                              | X                | Preserva                              | tion Code:                                | X                         |                               |                        | 1          | 1 1 1 1 1 1             | X            |                         | I                                  |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$   | 6.25 OD STREAMS (440-245042-2)       6/25/19       08/24       Water       1       1       1         16 25 BUTCH DUP (440-245042-3)       6/25/19       08/15       Water       1       1       1         16 25 BUTCH BUP (440-245042-3)       6/25/19       08/15       Water       1       1       1         10 CTCHER (440-245042-5)       6/26/19       06/26       Water       1       1       1       1         10 DTCHER (440-245042-5)       6/26/19       06/26       Water       1       1       1       1       1         10 DTCHER (440-245042-5)       6/27/19       06/22       Water       1       <  | 05 25 BUTCH (440-245042-1)                             | 6/25/19                        | 08:15<br>Pacific |                                       | Water                                     |                           | ×                             |                        |            |                         | +            |                         |                                    |
| 45042-3) $(E/25/19)$ $(08.15)$ Water       X       X       I       I       I         0 $(E/25/19)$ $06.05$ Water       X   | 6 25 BUTCH DUP (440-245042-3)       6/26/19       08:15       Water       X       1       1       1         UTCHER (440-245042-4)       6/26/19       06:19       06:19       06:19       Water       X       1       1       1         DD STREAMS (440-245042-5)       6/26/19       06:19       06:19       Water       X       1       1       1         DD STREAMS (440-245042-5)       6/26/19       06:19       Water       X       1       1       1         DD STREAMS (440-245042-5)       6/27/19       06:09       Water       X       1       1       1       1         DD STREAMS (440-245042-5)       6/27/19       06:07       Water       X       1       1       1       1         DD STREAMS (440-245042-6)       6/27/19       06:07       Water       X       1  | 06 25 OD STREAMS (440-245042-2)                        | 6/25/19                        | 08:24<br>Pacific |                                       | Water                                     |                           | ×                             |                        |            |                         | -            |                         |                                    |
| 05:06     Water     X     0     X     0     0       2-5)     6/26/19     05:19     05:19     05:19     05:19     0       2-5)     6/26/19     05:19     05:03     Water     X     0     0       2-5)     6/27/19     05:03     Water     X     0     0     0       2-7)     6/27/19     05:22     Water     X     0     0     0       2-7)     6/27/19     05:22     Water     X     0     0     0   | UTCHER (440-245042-4)       6/26/19       06/36       Water       X       I       I       I         DD STREAMS (440-245042-6)       6/26/19       06/19       Water       X       I       I       I         UTCHER (440-245042-6)       6/26/19       06/39       Water       X       I       I       I         UTCHER (440-245042-6)       6/27/19       06/32       Water       X       I       I       I         DD STREAMS (440-245042-7)       6/27/19       06/32       Water       X       I       I       I       I         DS STREAMS (440-245042-7)       6/27/19       06/32       Water       X       I <td>06 25 BUTCH DUP (440-245042-3)</td> <td>6/25/19</td> <td>08:15<br/>Pacific</td> <td></td> <td>Water</td> <td></td> <td>×</td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td>   | 06 25 BUTCH DUP (440-245042-3)                         | 6/25/19                        | 08:15<br>Pacific |                                       | Water                                     |                           | ×                             |                        |            |                         | 1            |                         |                                    |
| 2-5)     6/26/19     06.19     Water     X     I     I       0     920ffc     Water     X     I     I     I       0     6/27/19     06/09     Water     X     I     I     I       2-7)     6/27/19     06/22     Water     X     I     I     I   | DD STREAMS (440-245042-5)       6/26/19       06.19       Water       X       I       1       1         NUTCHER (440-245042-5)       6/26/19       06.19       Water       X       I       1       1         NUTCHER (440-245042-6)       6/27/19       06.22       Water       X       I       1       1         DD STREAMS (440-245042-7)       6/27/19       06.22       Water       X       I       1       1         DD STREAMS (440-245042-7)       6/27/19       06.22       Water       X       I       1       1         DD STREAMS (440-245042-7)       6/27/19       06.22       Water       X       I       1       1       1         DD STREAMS (440-245042-7)       6/27/19       06.22       Water       X       I       1       1       1         DD STREAMS (440-245042-7)       6/27/19       06.22       Water       X       I       1       1       1         DD STREAMS (440-245042-7)       6/27/19       06.22       Water       X       I       1       1       1         DD STREAMS (440-245042-7)       6/27/19       06.22       Water       X       I       1       1       1       1       1  | BUTCHER (440-245042-4)                                 | 6/26/19                        | 06:06<br>Pacific |                                       | Water                                     |                           | ×                             |                        |            |                         | -            |                         |                                    |
| 6/27/19     06/09     Water     X     X     X       2-7)     6/27/19     06/22     Water     X     1   | UTCHER (440-245042-6) 6/27/19 06/09 Water X X 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2  | OD STREAMS (440-245042-5)                              | 6/26/19                        | 06:19<br>Pacific |                                       | Water                                     |                           | ×                             |                        |            |                         | +            |                         |                                    |
| 6/27/19 06:22 Water X T  | DD STREAMS (440-245042-7) 6/27/19 06/22 Water X 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1  | BUTCHER (440-245042-6)                                 | 6/27/19                        | 06:09<br>Pacific |                                       | Water                                     |                           | ×                             |                        |            |                         | 1            |                         |                                    |
|  | Inder Since laboratory accreditations are subject to change. TestAmerica Laboratories. Inc. places the constript of marthod, analyte & accreditation compliance upon out subcontract laboratories. This sample shorted under chain-of-custody. If the laboratory duration increases the of Chained Chained Custod analyte & accreditation compliance upon out subcontract laboratories. This sample shorted under chain-of-custody. If the laboratory duration increases the of Chained Custod analyte & accreditation compliance upon out subcontract laboratories. This sample shorted under chain-of-custody. If the laboratory duration increases the of the Intervention date return the nature have analyte of the TestAmerica Laboratories increases for accreditation status should be brought to TestA  | OD STREAMS (440-245042-7)                              | 6/27/19                        | 06:22<br>Pacific |                                       | Water                                     |                           | ×                             |                        |            |                         | -            |                         |                                    |
|  | Inder Since laboratory acceduations are subject to change. TestAmerica Laboratories, Inc. places the constript of marthod, analytic & accreditation compliance upon out subcontract laboratories. This sample shorted of under chain-of-custody. If the laboratory di<br>auroratories the american immediated and the date mature analysis of marthod analytic & accreditation compliance upon out subcontract laboratories. This sample shorted of under chain-of-custody. If the laboratory di<br>auroratories the american immediated of the date mature analysis of the result of the TestAmerica Laboratories will be provided. Any changes to accreditation status should be brought to TestA  |  |                                |                  |                                       |   | -                         | -                             | -                      | -          | -                       |              |                         |                                    |
| Sample Disposal ( A fee may be assessed if samples are retained longer than 1 mo   |  | Deliverable Requested: I, II, III, IV, Other (specify) | Primary Delivera               | ble Rank:        | 5                                     |   | Spec                      | ial Instructio                | ins/QC Requ            | irements:  |                         |              |                         |                                    |
| Primary Deliverable Rank: 2  | Primary Deliverable Rank: 2 Special Instructions/QC Requirements:  | Empty Kit Relinquished by:                             |                                | Date:            |                                       |   | Time:                     | 1                             | ~                      | W          | thod of Shipment.       |              |                         | V                                  |
| Primary Deliverable Rank: 2     Sample Disposal ( A fee may be assessed if samples are retained longer than 1 mo       Primary Deliverable Rank: 2     Special Instructions/OC Requirements:       pate:     n   | Primary Deliverable Rank: 2 Special Instructions/QC Requirements:<br>Date: / A Method of Shipment  | circuistrates by A. A. A. M. M. M. C. M.               | Date free                      | 170              | 0                                     | Company L                                 | NO                        | ANT.                          | Della                  | 5          | Children Contract       | I B W        | 5                       | HH -                               |
| Primary Deliverable Rank: 2     Sample Disposal ( A fee may be assessed if samples are retained longer than 1 mo       Primary Deliverable Rank: 2     Special Instructions/OC Requirements:       Date:     Time:       Date:     Time:       Date:     Time:       Date:     Time:   | Primary Deliverable Rank: 2 Special Instructions/QC Requirements:<br>Date and the Date Trime: Anticol of Snoment Date of Snoment |  | Auto 1 1000                    |                  |                                       | Listion                                   | 3                         | · AA                          |                        |            |                         |              |                         | Lundung                            |

had by

/er: 01/16/201

8

oler Temperature(s) "C and Other Remarks

erved by:

pany

Ê

U

Custody Seal No.

Custody Seals Intact

13

Me/Time:

| ¢)   |
|------|
|      |
| -5   |
|      |
| -    |
| ÷.   |
| ö    |
| -ĕ   |
| 0    |
| ĕ    |
|      |
| 4    |
| to   |
| do l |
| Ē    |
|      |
| S    |
| =    |
| 4    |
| 2    |
| =    |
| 111  |
| -    |

17461 Derian Ave Suite 100

# Chain of Custody Record



| Client Information (Sub Contract Lab)   | Sampler.  |  |   | David  | Lab PM.<br>Davidkova, Lena                            | eu  | Camer Tracking No(s)          |   | COC No:<br>440-140684.1   |   |
|---|---|--|---|--|---|---|-------------------------------|---|---|---|
| Client Contact<br>Shipping/Receiving  | Phone.  |  |   | E-Mail.  | davidkova   | E-Mait.<br>lena. davidkova@testamericainc.com   | State of Origin<br>California |   | Page 1 of 1   |   |
| Company<br>TestAmerica Laboratories, Inc.   |   |  |   |  | Accreditatio<br>State Pro                             | Accreditations Required (See note):<br>State Program - California                                   |                               | 40  | Job #:<br>440-245042-1  |   |
| Address<br>5102 LaRoche Avenue,   | Due Date Requested:<br>7/10/2019  |  |   |  |   | Analysis  | Analysis Requested            | ă.  | Preservation Codes:   |   |
| City.<br>Savannah   | TAT Requested (days):   | ys):   |   |  |   |   |                               |   | A - HoL<br>B - NaOH<br>C - Zn Acetate   | M - Hexane<br>N - None<br>O - AsNaO2              |
| State, Z.p.<br>GA, 31404  |   |  |   |  | Idenavo   |   |                               |   | - Narris Acid<br>- Narris OA  | P - Na2045<br>Q - Na2503                          |
| Phone.<br>912-354-7858(Tel) 912-352-0165(Fax)   | # Od  |  |   |  | 1999  |   |                               | 101   | G - Amchior<br>H - Ascorbic Acid  | R - Nacocus<br>5 - H2SO4<br>T - TSP Dedecahvdrate |
| Emat  | WO #  |  |   |  | (0)   |   |                               |   | 1 - Ice<br>J - Di Water   | U - Acetone<br>V - MCAA                           |
| Project Name:<br>Ocean Disposal WW Sample   | Project #<br>44022550   |  |   |  | es or l   | NIAU  |                               | _   | K - EDTA<br>L - EDA   | W - pH 4-5<br>Z - other (specify)                 |
| Site:   | SSOW#   |  |   |  | r) as   | 4 10000   | _                             | -   | Other:  |   |
| Samole Identification - Client ID (Lab ID)  | Sample Date   | Sample<br>Time                                       | Sample<br>Type<br>(C=comp,<br>G=grab)             | Matrix<br>(www.sec.<br>Second.<br>Orwashing,<br>Orwashing,<br>Orwashing, | Pierdo Filtered S<br>MISM mnohee<br>420.1/Distril_Phi |   |                               | Total Number  | Special In  | Special Instructions/Note:                        |
|   | X   | X  | 1 70  | ion Code:  | X   |   |                               | X   |   |   |
| 06 25 BUTCH (440-245042-1)  | 6/25/19   | 08:15<br>Pacific                                     |   | Water  | ×   |   |                               | 2   |   |   |
| 06 25 OD STREAMS (440-245042-2)   | 6/25/19   | 08.24<br>Pacific                                     |   | Water  | ×   |   |                               | 2   |   |   |
| 06 25 BUTCH DUP (440-245042-3)  | 6/25/19   | 08:15<br>Pacific                                     |   | Water  | ×   |   |                               | 2   |   |   |
| OD STREAMS (440-245042-5)   | 6/26/19   | 06:19<br>Pacific                                     |   | Water  | ×   |   |                               | 2   |   |   |
| OD STREAMS (440-245042-7)   | 6/27/19   | 06:22<br>Pacific                                     |   | Water  | ×   |   |                               | 2   |   |   |
|   |   |  |   |  |   |   |                               | -   |   |   |
|   |   |  |   |  |   |   |                               |   |   |   |
|   |   |  |   |  | -   |   | _                             |   |   |   |
| Note: Since laborationy accreditations are subject to change. TestAmerica Laboratories, inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. <sup>1</sup><br>cumently maintain accreditation in the State of Ongin Isted above for analyta/hesta/matrix being analytaed, the samples must be shipped back to the TestAmerica laboratory or other instructions will<br>Laboratories, inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, inc. | a Laboratories, inc. places the<br>hystochests/matrix being analyzing<br>one current to date, return the si | ownership of m<br>od, the samples<br>gred Chain of C | ethod, analyte<br>must be shipp<br>ustody atteste | & accreditation<br>ed back to the<br>ig to said com                      | compliance<br>TestAmeric                              | upon out subcontract laborato<br>a laboratory or other instruction<br>estAmerica Laboratories, inc. | s will be provided. An        | This sample phymeric is forwarded under chain-of custody. If the laboratory does not<br>be provided. Any changes to accreditation status should be brought to Test/America. | hain of custody. If is should be build | the laboratory does not<br>wought to TestAmerica  |
| Possible Hazard Identification  |   |  |   |  | Samp  | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)                | be assessed if s              | amples are retained   | longer than 1   | ( month)  |
| Unconfirmed<br>Deliverable Requested: I, II, III, IV, Other (specify)   | Primary Deliverable   | able Rank: 2   |   |  | Specia  | Special Instructions/QC Requirements  | Disposal By Lab<br>ements:    | ab Archive For  | e For   | Months  |
| Empty Kit Relinquished by:  |   | Date:  |   |  | Time:   |   | Method o                      | od of Shipment  |   |   |
| Reinguished by Leving 21  | 7/2/19  | 170  | 1 0   | Vaneamo  | SUS   | N Remain  | }                             | CI SIL  | 206   | Compress .  |
| Reinraushed by  | Date/Time   |  | 5   | ompany   | Re  | ceived by   |                               | Date/Time.  |   | Company   |
| Reinquished by  | Date/Time.  |  |   | Company  | Fie   | eceived by  |                               | Date/Time:  |   | Company   |
| Custody Seals Intact: Custody Seal No.:<br>A Vac A No.  |   |  |   |  | 8   | xoler Temperature(s) "C and Ot  | d Other Remarks               |   |   |   |

2

13 14 15

Ver: 01/16/2019

Eurofins TestAmerica, Irvine 17461 Denian Ave Suite 100 Irvine. CA 92614-5817

Chain of Custody Record



| Client Information (Sub Contract Lab)   | Sampler  |                                |                                       | David   | Lab PM<br>Davidkova, Lena   | er   | Carrier Tracking No(s)         | (s)oN 6             | COC No:<br>440-140794.1                      |   |
|---|--|--------------------------------|---------------------------------------|---|---|--|--------------------------------|---------------------|--|---|
| Clent Contact:<br>Shipping/Receiving  | Fhone:   |                                |                                       | E-Mail:<br>lena.d   | davidkova   | E-Mait:<br>lena.davidkova@testamericainc.com   | State of Origin:<br>California |                     | Page 1 of 1                                  |   |
| Company:<br>TestAmerica Laboratories, Inc.  |  |                                |                                       |   | Accreditation<br>State Prog   | Accretitations Required (See note):<br>State Program - California  |                                |                     | Job #:<br>440-245042-1                       |   |
| Address:<br>5102 LaRoche Avenue,  | Due Date Requested<br>7/10/2019                                      | :pa                            |                                       |   |   | Analysis Requested   | tequested                      |                     | Preservation Codes                           | es:<br>M - Morene                       |
| City:<br>Savannah<br>State, Zp:   | TAT Requested (days):  | :(ske                          |                                       |   | eldere  |  |                                |                     | B - NaCH<br>C - Zh Acetate<br>D - Nitre Acid |   |
| GA, 31404<br>Phone.   | PO #   |                                |                                       |   | Recov   |  |                                |                     | E - MeOH<br>G - Amchlor                      | G - Na25203<br>R - Na25203<br>S - H2504 |
| 912-354-7858(Tel) 912-352-0165(Fax)<br>Email:   | WO#:   |                                |                                       |   | (0  |  | _                              |                     |  | T - TSP Dodecahydrate<br>U - Acetone    |
| Project Name.<br>Ocean Discosal WW Sample   | Project #:<br>44022550   |                                |                                       |   | N JO SH   |  |                                |                     | tainers                                      | W - pH 4-5<br>Z - other (specify)       |
| Second support at a carrying  | SSOW#:   |                                |                                       |   | N) ds   |  |                                |                     | of Other:                                    |   |
| Sample Identification - Client ID (Lab ID)  | Sample Date  | Sample<br>Time                 | Sample<br>Type<br>(C=comp,<br>G=grab) | Matrix<br>(www.s.c.sodd<br>Owensteid,<br>Bit-Tanee, ArAP) | Bertorm MSM mootes<br>MNSM mootes |  |                                |                     | Total Number Special In                      | Special Instructions/Note:              |
|   | X  | X                              | Preserva                              | Preservation Code:  | X   |  |                                |                     | X  | V                                       |
| BUTCHER (440-245042-4)  | 6/26/19  | 06:06<br>Pacific               |                                       | Water   | ×   |  |                                |                     | 2  |   |
| BUTCHER (440-245042-6)  | 6/27/19  | 60:90                          |                                       | Water   | ×   |  |                                |                     | 2  |   |
|   |  |                                |                                       |   |   |  |                                |                     |  |   |
|   | -  |                                |                                       |   |   |  |                                |                     |  |   |
|   |  |                                |                                       |   |   |  |                                | _                   |  |   |
|   |  |                                |                                       |   |   |  |                                |                     |  |   |
|   | -  |                                |                                       |   | -   |  | -                              | -                   |  |   |
| Nole: Since laboratory accreditations are subject to change, TestAmeri  | rica Laboratories, inc. places t                                     | te comership c                 | of method, anal                       | yte & accredita   | 6on complian  | nce upon out subcontract labora  | tories. This sample            | shipment is forwar  | ded under chain-of-custod                    | y. If the laboratory does not           |
| currently maintain accreditation in the State of Origin tabled above for analysis/test/matrix being analys<br>Laboratories, inc. attention immediately. If all requested accreditations are ourient to date, return the s | inalysis/lests/matrix being ana<br>s are current to date, return the | lyzed, the sam<br>signed Chain | ples must be s<br>of Custody att      | hipped back to<br>esting to said o                        | the TestAme<br>complicance to   | red, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica<br>igned Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc. | ons will be provided.          | L Any changes to a  | accreditation status should                  | be brought to TestAmerica               |
| Possible Hazard Identification  |  |                                |                                       |   | Samp  | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)   | be assessed if a               | samples are re      | tained longer than                           | month)                                  |
| Unconfirmed   |  |                                |                                       |   |   | Return To Client Disp  | Disposal By Lab                |                     | Archive For                                  | Months                                  |
| Deliverable Requested: I, II, III, IV, Other (specify)  | Primary Delivera   | rable Kank: Z                  | 2                                     |   | Specie  | al instructions/QC Kequin  |                                |                     |  |   |
| Empty Kit Relinquished by: /  |  | Date:                          |                                       |   | Time:   |  | Method 6                       | Method of Shipment: |  |   |
| Reinquered by   | Date Trape /19   | 11 6                           | 45                                    | Company   | RV RO   | Received by ALA  |                                | Date/Time:          | asb 61                                       | COMPANY                                 |
| Refinquished by:  | Date/Time:   |                                |                                       | Company   | Re  | Received by.   |                                | Date/Time:          |  | Company                                 |
| Relinquished by:  | Date/Time:   |                                |                                       | Company   | Re  | Received by:   |                                | Date/Time:          |  | Company                                 |
| Custody Seals Intact: Custody Seal No.:<br>A Yes A No   |  |                                |                                       |   | 8   | Cocler Temperature(s) °C and Other Remarks   | her Remarks:                   | 3.1/ 3              | 3.1  |   |
|   |  |                                |                                       |   |   |  |                                |                     |  | Ver: 01/16/2019                         |

9 10 11

#### Login Number: 245042 List Number: 1 Creator: Bonta, Lucia F

| Question   | Answer | Comment  |
|--|--------|--|
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td> | True   |  |
| The cooler's custody seal, if present, is intact.  | N/A    | Not present  |
| Sample custody seals, if present, are intact.  | N/A    | Not Present  |
| The cooler or samples do not appear to have been compromised or tampered with.                             | True   |  |
| Samples were received on ice.  | False  | Water present in cooler; indicates evidence of melted ice. |
| Cooler Temperature is acceptable.  | False  | Cooler temperature outside required temperature criteria.  |
| Cooler Temperature is recorded.  | True   |  |
| COC is present.  | True   |  |
| COC is filled out in ink and legible.  | True   |  |
| COC is filled out with all pertinent information.  | True   |  |
| Is the Field Sampler's name present on COC?  | True   |  |
| There are no discrepancies between the containers received and the COC.                                    | True   |  |
| Samples are received within Holding Time (excluding tests with immediate HTs)                              | True   |  |
| Sample containers have legible labels.   | True   |  |
| Containers are not broken or leaking.  | True   |  |
| Sample collection date/times are provided.   | True   |  |
| Appropriate sample containers are used.  | True   |  |
| Sample bottles are completely filled.  | True   |  |
| Sample Preservation Verified.  | N/A    |  |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs                           | True   |  |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").                            | False  | Headspace larger than 1/4".                                |
| Multiphasic samples are not present.   | True   |  |
| Samples do not require splitting or compositing.   | True   |  |
| Residual Chlorine Checked.   | N/A    |  |

Job Number: 440-245042-1

List Source: Eurofins TestAmerica, Irvine

#### Login Number: 245042 List Number: 2 Creator: Say, Thomas C

| Question   | Answer | Comment |
|--|--------|---------|
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td> | True   |         |
| The cooler's custody seal, if present, is intact.  | True   |         |
| Sample custody seals, if present, are intact.  | True   |         |
| The cooler or samples do not appear to have been compromised or tampered with.                             | True   |         |
| Samples were received on ice.  | True   |         |
| Cooler Temperature is acceptable.  | True   |         |
| Cooler Temperature is recorded.  | True   |         |
| COC is present.  | True   |         |
| COC is filled out in ink and legible.  | True   |         |
| COC is filled out with all pertinent information.  | True   |         |
| Is the Field Sampler's name present on COC?  | True   |         |
| There are no discrepancies between the containers received and the COC.                                    | True   |         |
| Samples are received within Holding Time (excluding tests with immediate HTs)                              | True   |         |
| Sample containers have legible labels.   | True   |         |
| Containers are not broken or leaking.  | True   |         |
| Sample collection date/times are provided.   | True   |         |
| Appropriate sample containers are used.  | True   |         |
| Sample bottles are completely filled.  | True   |         |
| Sample Preservation Verified.  | True   |         |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs                           | True   |         |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").                            | True   |         |
| Multiphasic samples are not present.   | True   |         |
| Samples do not require splitting or compositing.   | True   |         |
| Residual Chlorine Checked.   | N/A    |         |

#### Job Number: 440-245042-1

List Creation: 07/03/19 10:28 AM

List Source: Eurofins TestAmerica, Pittsburgh

#### Login Number: 245042 List Number: 4 Creator: Darlington, Jennifer M

Job Number: 440-245042-1

| 1 |    |
|---|----|
| 5 |    |
| 1 | 5  |
| _ |    |
|   |    |
|   | 8  |
|   | 9  |
|   |    |
|   |    |
|   |    |
|   | 13 |
|   | 14 |
|   | 15 |

| List Source: Eurofins TestAmerica, Sacramento |
|---|
| List Creation: 07/03/19 01:40 PM              |

| Question  | Answer | Comment                            |
|---|--------|------------------------------------|
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td> | N/A    |                                    |
| The cooler's custody seal, if present, is intact.   | True   | Seal present with no number.       |
| Sample custody seals, if present, are intact.   | N/A    |                                    |
| The cooler or samples do not appear to have been compromised or tampered with.                            | True   |                                    |
| Samples were received on ice.   | True   |                                    |
| Cooler Temperature is acceptable.   | True   |                                    |
| Cooler Temperature is recorded.   | True   | 2.8c                               |
| COC is present.   | True   |                                    |
| COC is filled out in ink and legible.   | True   |                                    |
| COC is filled out with all pertinent information.   | True   |                                    |
| Is the Field Sampler's name present on COC?   | False  | Received project as a subcontract. |
| There are no discrepancies between the containers received and the COC.                                   | True   |                                    |
| Samples are received within Holding Time (excluding tests with immediate HTs)                             | True   |                                    |
| Sample containers have legible labels.  | True   |                                    |
| Containers are not broken or leaking.   | True   |                                    |
| Sample collection date/times are provided.  | True   |                                    |
| Appropriate sample containers are used.   | True   |                                    |
| Sample bottles are completely filled.   | True   |                                    |
| Sample Preservation Verified.   | N/A    |                                    |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs                          | True   |                                    |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").                           | N/A    |                                    |
| Multiphasic samples are not present.  | True   |                                    |
| Samples do not require splitting or compositing.  | True   |                                    |
| Residual Chlorine Checked.  | N/A    |                                    |
|   |        |                                    |

#### Login Number: 245042 List Number: 3 Creator: Weston, Pamela

| Question  | Answer | Comment |
|---|--------|---------|
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td> | N/A    |         |
| The cooler's custody seal, if present, is intact.   | True   |         |
| Sample custody seals, if present, are intact.   | True   |         |
| The cooler or samples do not appear to have been compromised or tampered with.                            | True   |         |
| Samples were received on ice.   | True   |         |
| Cooler Temperature is acceptable.   | True   |         |
| Cooler Temperature is recorded.   | True   |         |
| COC is present.   | True   |         |
| COC is filled out in ink and legible.   | True   |         |
| COC is filled out with all pertinent information.   | True   |         |
| Is the Field Sampler's name present on COC?   | N/A    |         |
| There are no discrepancies between the containers received and the COC.                                   | True   |         |
| Samples are received within Holding Time (excluding tests with immediate HTs)                             | True   |         |
| Sample containers have legible labels.  | True   |         |
| Containers are not broken or leaking.   | True   |         |
| Sample collection date/times are provided.  | True   |         |
| Appropriate sample containers are used.   | True   |         |
| Sample bottles are completely filled.   | True   |         |
| Sample Preservation Verified.   | N/A    |         |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs                          | True   |         |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").                           | True   |         |
| Multiphasic samples are not present.  | True   |         |
| Samples do not require splitting or compositing.  | True   |         |
| Residual Chlorine Checked.  | N/A    |         |
|   |        |         |

#### Job Number: 440-245042-1

List Creation: 07/03/19 03:23 PM

List Source: Eurofins TestAmerica, Savannah

#### Login Number: 245042 List Number: 5 Creator: Sims, Robert D

| Question  | Answer | Comment |
|---|--------|---------|
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td> | N/A    |         |
| The cooler's custody seal, if present, is intact.   | True   |         |
| Sample custody seals, if present, are intact.   | True   |         |
| The cooler or samples do not appear to have been compromised or tampered with.                            | True   |         |
| Samples were received on ice.   | True   |         |
| Cooler Temperature is acceptable.   | True   |         |
| Cooler Temperature is recorded.   | True   |         |
| COC is present.   | True   |         |
| COC is filled out in ink and legible.   | True   |         |
| COC is filled out with all pertinent information.   | True   |         |
| s the Field Sampler's name present on COC?  | N/A    |         |
| There are no discrepancies between the containers received and the COC.                                   | True   |         |
| Samples are received within Holding Time (excluding tests with immediate HTs)                             | True   |         |
| Sample containers have legible labels.  | True   |         |
| Containers are not broken or leaking.   | True   |         |
| Sample collection date/times are provided.  | True   |         |
| Appropriate sample containers are used.   | True   |         |
| Sample bottles are completely filled.   | True   |         |
| Sample Preservation Verified.   | N/A    |         |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs                          | True   |         |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").                           | True   |         |
| Multiphasic samples are not present.  | True   |         |
| Samples do not require splitting or compositing.  | True   |         |
| Residual Chlorine Checked.  | N/A    |         |
|   |        |         |

List Source: Eurofins TestAmerica, Savannah

List Creation: 07/06/19 01:36 PM

7/31/2019 (Rev. 1)

Job.

440-245042 Field Sheet

8

9

10

11

12 13

15

Page 98 of 99

| JZZC ZELE 82Sh :# Bulyoer |                     |
|---------------------------|---------------------|
| Sample Receiving Notes    | Environment Testing |

GSO / OnTrac / Goldstreak / USPS / Other\_

SO (bO) EO / 2-Day / Ground / UPS / CDO / Courier

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

| 61 | SIL  | +    | Initials: DU Date:                                  |                       |
|----|------|------|---|-----------------------|
|    | 1412 | 101  | J   |                       |
| a  | 70   | D    | Sample out of temp?                                 |                       |
|    |      | 女    | Sample temp OK?                                     |                       |
|    |      | Ø,   | Multiphasic samples are not present?                |                       |
| Ø  |      |      | Zero headspace?*                                    |                       |
|    |      | GL.  | Sample bottles are completely filled?               |                       |
|    |      | B    | Appropriate containers are used?                    |                       |
|    |      | 西    | Sample date/times are provided.                     |                       |
|    |      | 04   | Containers are not broken or leaking?               |                       |
| D  |      | R    | Sample containers have legible labels?              |                       |
|    |      | 5    | Samples w/o discrepancies?                          |                       |
| Π  | BY N | α    | Samples compromised/tampered with?                  | and the second second |
|    | đ    |      | Cooler compromised/tampered with?                   |                       |
| 枚  |      |      | Sample preservatives verified?                      |                       |
|    |      | 菊    | Samples received within holding time?               |                       |
|    |      | 6    | CoC is complete w/o discrepancies?                  |                       |
| 1  |      |      | Alkalinity has no headspace?                        |                       |
| d  | ۵    |      | Perchlorate has headspace? (Methods 314, 331, 6850) |                       |
| AN | ōN   | SaY  |   |                       |
|    |      |      | ACW Filed: Yes D No                                 |                       |
|    |      | D e  | From: Temp Blank 🖄 Sampl                            |                       |
| _  | 3    | 2    | Temp Observed: 2.5 Corrected:                       |                       |
| -  |      |      | Cooler ID:  |                       |
|    | _    | _    | Sample Custody Seal:                                |                       |
|    |      |      |   |                       |
|    |      |      | Cooler Custody Seal: Sec.                           |                       |
|    |      | Ofpe | Ice X Met X Gel                                     |                       |
| -  | -    | _    | Them. ID: ALLE Corr. Factor:                        | :5                    |

1/12CORP/CORP/QA/QA/DA\_FACILITIES/SACRAMENTO-QA/DOCUMENT-MANAGEMENT/FORMS/QA-812 SAMPLE RECEIVING NOTES.DOC QA-812

GIIM

7/31/2019 (Rev. 1)

sniforus 🌼

Job.

| Page | 99 of | 99 |
|------|-------|----|
|------|-------|----|

Tracking # :

Sample Receiving Notes

9726 ZELE 855h

GIIM

Environment Testing TestAmerica

440-245042 Field Sheet

GSO / OnTrac / Goldstreak / USPS / Other

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.

| 51 | 5/2 | - t  | Initials: OU Date: -                   |  |
|----|-----|------|--|--|
| 0  | 20  | Tor  |  |  |
|    |     | 女    | Sample out of temp?                    |  |
|    |     | A K  | Sample temp OK?                        |  |
| 0  |     |      | Multiphasic samples are not present?   |  |
| Ø  |     |      | Zero headspace?*                       |  |
|    |     | GL.  | Sample bottles are completely filled?  |  |
|    |     | ø    | Appropriate containers are used?       |  |
|    |     | 肉    | Sample date/times are provided.        | and and an and a second  |
|    |     | Ca(  | Containers are not broken or leaking?  |  |
|    |     | R    | Sample containers have legible labels? |  |
|    |     | 5    | Samples w/o discrepancies?             |  |
|    | 4   |      | Samples compromised/tampered with?     | and the second sec |
|    | đ   |      | Cooler compromised/tampered with?      |  |
| 粒  |     |      | Sample preservatives verified?         | the second s   |
|    |     | 如    | Samples received within holding time?  |  |
|    |     | 6    | CoC is complete w/o discrepancies?     |  |
| 1  |     |      | Alkalinity has no headspace?           |  |
| d  |     |      | (Methods 314, 331, 6850)               |  |
|    | _   |      | Perchlorate has headspace?             |  |
| AN | ON  | SeY  |  |  |
|    |     | D    | NCW Eiled: Yes D No                    |  |
|    |     |      | From: Temp Blank D Sample              |  |
|    | 0   | -    | Temp Observed: Corrected:              |  |
|    | 9   | 2    | 50                                     |  |
| -  |     |      | Cooler ID:                             |  |
|    |     |      | Sample Custody Seal:                   | and the second   |
|    |     |      | Cooler Custody Seal:                   |  |
|    |     |      | Cooler Custody Seal: SEA               |  |
|    |     | othe | Ice X Met X Gel                        |  |
|    |     |      | Them. ID: H & Con. Factor:             | lotes:   |

TACORPICORPICAR FACILITIES/SACRAMENTO-CANDOCUMENT-MANAGEMENT/FORMS/QA-812 SAMPLE RECEIVING NOTES.DOC QA-812

#### **Ocean Disposal Wastewater Sample Validation**

#### July 23, 2019

#### Laboratory Report 440-245042-1

#### **Introduction:**

The samples were reported to the method detection limit (MDL) and validated at a Stage 2A level. The samples were received outside of the 0-6 degree Celsius (°C) temperature range at 18.1 °C, 18.3 °C, 20.5 °C, 20.6 °C, 20.6 °C, 21.4 °C and 26.0 °C. Qualifications were applied to the majority of the data based on the temperature exceedance indicating that the reported values are considered estimated (J) or the non-detect values are considered as estimated less than the MDL (UJ) or rejected (R) volatiles. The metals data were unaffected by the temperature exceedances. Additionally, a subset of the non-detect volatile organic compounds and non-detect nitrite, nitrate, and nitrate/nitrite results were R qualified as rejected due to holding time exceedances. The remaining data are considered usable within the limitation of the qualifications. The results for the associated laboratory quality control (QC) samples e.g. method blanks and laboratory control samples, were within the laboratory acceptance for all of the tests listed below with the exception of chromium in a method blank (see metals qualifications below). Batch matrix spike/matrix spike duplicate pairs were reported with the data. Since these were batch QC the results had no impact on the project samples and qualifications were not applied to the data based on these results.

# Method 8260 B Volatile Qualifications

# **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius, significant head space)

2 = holding times (pH was greater than 2 and analyzed greater than 7 days past collection

7 = Field Duplicate RPD exceeded

11 = Internal standard criteria not met

| Sample ID  | Analytical | Analyte         | Laboratory | Units | Validated/Qualified | Reason  |
|------------|------------|-----------------|------------|-------|---------------------|---------|
|            | Test       |                 | Result     |       | Result*             | Code**  |
| 0625 BUTCH | 8260B      | 1,2-            |            |       |                     | 1       |
|            |            | Dichloropropane | 0.25U      | ug/L  | 0.25R               |         |
|            |            | Benzene         | 2.0        | ug/L  | 2.0J                | 1,7     |
|            |            | Chloroform      | 0.25U      | ug/L  | 0.25R               |         |
|            |            | Ethylbenzene    | 10         | ug/L  | 10J                 | 1,7     |
|            |            | m,p-Xylene      | 0.5U       | ug/L  | 0.5R                |         |
|            |            | Methylene       |            |       |                     | 1       |
|            |            | Chloride        | 1.1U       | ug/L  | 1.1R                |         |
|            |            | o-Xylene        | 0.25U      | ug/L  | 0.25R <sub>1</sub>  |         |
|            |            | Toluene         | 0.81J      | ug/L  | 0.81J               | 1       |
|            |            | Xylenes, Total  | 0.25U      | ug/L  | 0.25R               |         |
| 0625 OD    | 8260B      | 1,2-            |            |       | 1                   | 1,2     |
| STREAMS    |            | Dichloropropane | 1.3U       | ug/L  | 1.3R                |         |
|            |            | Benzene         | 1.3U       | ug/L  | 1.3R 1              | 1,2     |
|            |            | Chloroform      | 1.3U       | ug/L  | 1.3R                | 1,2     |
|            |            | Ethylbenzene    | 1.3U*      | ug/L  | 1.3R <sub>1</sub>   | 1,2, 11 |
|            |            | m,p-Xylene      | 2.5U       | ug/L  | 2.5R                | 1,2     |
|            |            | Methylene       |            |       |                     | 1,2     |
|            |            | Chloride        | 5.5U       | ug/L  | 5.5R                |         |
|            |            | o-Xylene        | 1.3U       | ug/L  | 1.3R                | 1,2     |

| Sample ID   | Analytical | Analyte         | Laboratory | Units | Validated/Qualified | Reason |
|-------------|------------|-----------------|------------|-------|---------------------|--------|
|             | Test       |                 | Result     |       | Result*             | Code** |
|             |            | Toluene         | 1.3U       | ug/L  | 1.3R                | 1,2    |
|             |            | Xylenes, Total  | 1.3U       | ug/L  | 1.3R                | 1,2    |
| 06 25 BUTCH | 8260B      | 1,2-            |            |       |                     | 1      |
| DUP         |            | Dichloropropane | 0.25U      | ug/L  | 0.25R               |        |
|             |            | Benzene         | 1.5J       | ug/L  | 1.5J                | 1,7    |
|             |            | Chloroform      | 0.25U      | ug/L  | 0.25R               |        |
|             |            | Ethylbenzene    | 5.6        | ug/L  | 5.6J                | 1,7    |
|             |            | m,p-Xylene      | 0.5U       | ug/L  | 0.5R                |        |
|             |            | Methylene       |            |       |                     | 1      |
|             |            | Chloride        | 5.0U       | ug/L  | 5.0R                |        |
|             |            | o-Xylene        | 0.25U      | ug/L  | 0.25R 1             |        |
|             |            | Toluene         | 0.67J      | ug/L  | 0.67J               | 1      |
|             |            | Xylenes, Total  | 0.25U      | ug/L  | 0.25R               |        |
| BUTCHER     | 8260B      | 1,2-            |            |       | 1                   | 1      |
| 6/26/19)    |            | Dichloropropane | 0.25U      | ug/L  | 0.25R               |        |
|             |            | Benzene         | 0.93J      | ug/L  | 0.93J <sub>1</sub>  | 1      |
|             |            | Chloroform      | 0.25U      | ug/L  | 0.25R               |        |
|             |            | Ethylbenzene    | 1.2J       | ug/L  | 1.2J 1              | 1      |
|             |            | m,p-Xylene      | 0.5U       | ug/L  | 0.5R                |        |
|             |            | Methylene       |            |       |                     | 1      |
|             |            | Chloride        | 1.1U       | ug/L  | 1.1R                |        |
|             |            | o-Xylene        | 0.25U      | ug/L  | 0.25R <sub>1</sub>  |        |
|             |            | Toluene         | 0.33J      | ug/L  | 0.33J               | 1      |
|             |            | Xylenes, Total  | 0.25U      | ug/L  | 0.25R               |        |
| OD STREAMS  | 8260B      | 1,2-            |            |       | 1                   | 1,2    |
| (6/26/19)   |            | Dichloropropane | 1.3U       | ug/L  | 1.3R                |        |
|             |            | Benzene         | 1.3U       | ug/L  | 1.3R 1              | 1,2    |
|             |            | Chloroform      | 1.3U       | ug/L  | 1.3R                | 1,2    |
|             |            | Ethylbenzene    | 1.3U       | ug/L  | 1.3R 1              | 1,2    |

| Sample ID | Analytical | Analyte         | Laboratory | Units | Validated/Qualified | Reason |
|-----------|------------|-----------------|------------|-------|---------------------|--------|
|           | Test       |                 | Result     |       | Result*             | Code** |
|           |            | m,p-Xylene      | 2.5U       | ug/L  | 2.5R                | 1,2    |
|           |            | Methylene       |            |       |                     | 1,2    |
|           |            | Chloride        | 5.5U       | ug/L  | 5.5R                |        |
|           |            | o-Xylene        | 1.3U       | ug/L  | 1.3R                | 1,2    |
|           |            | Toluene         | 1.3U       | ug/L  | 1.3R                | 1,2    |
|           |            | Xylenes, Total  | 1.3U       | ug/L  | 1.3R                | 1,2    |
| BUTCHER   | 8260B      | 1,2-            |            |       |                     | 1      |
| (6/27/29) |            | Dichloropropane | 0.25U      | ug/L  | 0.25R               |        |
|           |            | Benzene         | 1.1J       | ug/L  | 1.1J                | 1      |
|           |            | Chloroform      | 0.25U      | ug/L  | 0.25R               |        |
|           |            | Ethylbenzene    | 2.0        | ug/L  | 2.0J                | 1      |
|           |            | m,p-Xylene      | 0.5U       | ug/L  | 0.5R                |        |
|           |            | Methylene       |            |       |                     | 1      |
|           |            | Chloride        | 1.1U       | ug/L  | 1.1R                |        |
|           |            | o-Xylene        | 0.25U      | ug/L  | 0.25R 1             |        |
|           |            | Toluene         | 0.4J       | ug/L  | 0.4J                | 1      |
|           |            | Xylenes, Total  | 0.25U      | ug/L  | 0.25R               |        |
| ODSTREAMS | 8260B      | 1,2-            |            |       | 1                   | 1,2    |
| (6/27/29) |            | Dichloropropane | 1.3U       | ug/L  | 1.3R                |        |
|           |            | Benzene         | 1.3U       | ug/L  | 1.3R 1              | 1,2    |
|           |            | Chloroform      | 1.3U       | ug/L  | 1.3R                | 1,2    |
|           |            | Ethylbenzene    | 1.3U       | ug/L  | 1.3R 1              | 1,2    |
|           |            | m,p-Xylene      | 2.5U       | ug/L  | 2.5R                | 1,2    |
|           |            | Methylene       |            | ug/L  |                     | 1,2    |
|           |            | Chloride        | 5.5U       |       | 5.5R                |        |
|           |            | o-Xylene        | 1.3U       | ug/L  | 1.3R                | 1,2    |
|           |            | Toluene         | 1.3U       | ug/L  | 1.3R                | 1,2    |
|           |            | Xylenes, Total  | 1.3U       | ug/L  | 1.3R                | 1,2    |

\*Validation qualifier definitions are included in Attachment 1 of this report

\*\*Reason code definitions are included in Attachment 2 of this report

ug/L – microgram per liter

 $U-\ensuremath{\text{the analyte}}\xspace$  was not detected at or above the reported value

J -laboratory flag; result is less than the reporting limit but greater than the method detection limit and the concentration is an approximate value.

\*-laboratory flag; ISTD response or retention time outside acceptance limits

# Field Duplicate Assessment = Acceptance criteria relative percent difference (RPD) <30%

| Sample | Analytical | Analytes        | Results | RPD | Validated/Qualified | Reason |
|--------|------------|-----------------|---------|-----|---------------------|--------|
| ID     | Test       | -               | (ug/L)  |     | Result              | Code   |
| 0625   | 8260B      | 1,2-            |         |     | NA                  | NA     |
| BUTCH  |            | Dichloropropane | 0.25U   |     |                     |        |
|        |            | Benzene         | 2.0     |     | 2.0 J               | 7      |
|        |            | Chloroform      | 0.25U   |     | NA                  | NA     |
|        |            | Ethylbenzene    | 10      |     | 10 J                | 7      |
|        |            | m,p-Xylene      | 0.5U    |     | NA                  | NA     |
|        |            | Methylene       |         |     | NA                  | NA     |
|        |            | Chloride        | 1.1U    |     |                     |        |
|        |            | o-Xylene        | 0.25U   |     | NA                  | NA     |
|        |            | Toluene         | 0.81J   |     | NA                  | NA     |
|        |            | Xylenes, Total  | 0.25U   |     | NA                  | NA     |
| 06 25  | 8260B      | 1,2-            |         | 0%  | NA                  | NA     |
| BUTCH  |            | Dichloropropane | 0.25U   |     |                     |        |
| DUP    |            | Benzene         | 1.5J    | NC  | 1.5 J               | 7      |
|        |            | Chloroform      | 0.25U   | 0%  | NA                  | NA     |
|        |            | Ethylbenzene    | 5.6     | 56% | 5.6 J               | 7      |
|        |            | m,p-Xylene      | 0.5U    | 0%  | NA                  | NA     |
|        |            | Methylene       |         | 0%  | NA                  | NA     |
|        |            | Chloride        | 5.0U    |     |                     |        |

| o-Xylene       | 0.25U | 0% | NA | NA |
|----------------|-------|----|----|----|
| Toluene        | 0.67J | NC | NA | NA |
| Xylenes, Total | 0.25U | 0% | NA | NA |

NA – not applicable

NC – not calculable

# Method 625 Semi-Volatiles Qualifications

Reason Codes

1 = preservation (received outside of temperature >10 degrees Celsius)

2 = holding time exceedance

| Sample ID                | Analytical<br>Test | Analyte                        | Laboratory<br>Result | Units | Validated/Qualified<br>Result | Reason Code |
|--------------------------|--------------------|--------------------------------|----------------------|-------|-------------------------------|-------------|
| 06 25 BUTCH              | 625                | Bis(2-ethylhexyl)<br>phthalate | 80U H                | ug/L  | 80UJ                          | 1,2         |
| 06 25 OD<br>STREAMS      | 625                | Bis(2-ethylhexyl)<br>phthalate | 400U H               | ug/L  | 400UJ                         | 1,2         |
| 06 25 BUTCH<br>DUP       | 625                | Bis(2-ethylhexyl)<br>phthalate | 80U H                | ug/L  | 80UJ                          | 1,2         |
| BUTCHER<br>(6/26/19)     | 625                | Bis(2-ethylhexyl)<br>phthalate | 80U H                | ug/L  | 80UJ                          | 1,2         |
| OD STREAMS<br>(6/26/19)  | 625                | Bis(2-ethylhexyl)<br>phthalate | 400U H               | ug/L  | 400UJ                         | 1,2         |
| BUTCHER<br>(6/27/19)     | 625                | Bis(2-ethylhexyl)<br>phthalate | 40U H                | ug/L  | 40UJ                          | 1,2         |
| OD STREAMS<br>(06/27/19) | 625                | Bis(2-ethylhexyl)<br>phthalate | 400U H               | ug/L  | 400UJ                         | 1,2         |

ug/L – microgram per liter

U – the analyte was not detected at or above the reported value

H – Lab flag; Sample was prepped or analyzed beyond the specified holding time

Field Duplicate Assessment – no qualifications RPD = 0%

# Method 8315 Carbonyl Compounds Qualifications

# **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius)

2= holding time exceedance

7 = Field Duplicate RPD exceeded

| Sample ID   | Analytical<br>Test | Analyte      | Laboratory<br>Result | Units | Validated/Qualified<br>Result | Reason Code |
|-------------|--------------------|--------------|----------------------|-------|-------------------------------|-------------|
| 06 25 BUTCH | 8315               | Formaldehyde | 0.091 H              | ug/L  | 0.091 J                       |             |
|             |                    |              |                      |       |                               | 1,2,7       |
| 06 25 OD    | 8315               | Formaldehyde | 0.096 H              | ug/L  | 0.096 J                       | 1,2         |
| STREAMS     |                    |              |                      |       |                               |             |
| 06 25 BUTCH | 8315               | Formaldehyde | 0.057 H              | ug/L  | 0.057 J                       | 1,2,7       |
| DUP         |                    |              |                      |       |                               |             |
| BUTCHER     | 8315               | Formaldehyde | 0.052 H              | ug/L  | 0.052 J                       | 1,2         |
| (6/26/19)   |                    |              |                      |       |                               |             |
| OD STREAMS  | 8315               | Formaldehyde | 0.11 H               | ug/L  | 0.11 J                        | 1,2         |
| (6/26/19)   |                    |              |                      |       |                               |             |
| BUTCHER     | 8315               | Formaldehyde | 0.13 H               | ug/L  | 0.13 J                        | 1,2         |
| (6/27/19)   |                    |              |                      |       |                               |             |
| OD STREAMS  | 8315               | Formaldehyde | 0.15 H               | ug/L  | 0.15 J                        | 1,2         |
| (06/27/19)  |                    |              |                      |       |                               |             |

ug/L – microgram per liter

H – Lab flag; Sample was prepped or analyzed beyond the specified holding time

| Sample<br>ID          | Analytical<br>Test | Analytes     | Results (mg/L) | RPD | Validated/Qualified<br>Result | Reason<br>Code |
|-----------------------|--------------------|--------------|----------------|-----|-------------------------------|----------------|
| 06 25<br>BUTCH        | 8315               | Formaldehyde | 0.091<br>H     | 46% | 0.091 J                       | 7              |
| 06 25<br>BUTCH<br>DUP | 8315               | Formaldehyde | 0.057<br>H     |     | 0.057 J                       | 7              |

Field Duplicate Assessment = Acceptance criteria relative percent difference (RPD) <30%

#### Method 6010B Metals Qualifications -

Chromium was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 556431 (0.00260 mg/L). Chromium was detected above the RL in the associated samples except for sample 06 25 Butch DUP which had an estimated concentration of chromium (0.060 JB). Therefore the estimated chromium result in sample 06 25 Butch DUP was elevated as non-detect at the RL.

#### **Reason Code**

3 = Blank contamination (i.e., method, trip, equipment, etc.)

| Sample ID          | Analytical | Analyte  | Laboratory | Units | Validated/Qualified | Reason Code |
|--------------------|------------|----------|------------|-------|---------------------|-------------|
|                    | Test       |          | Result     |       | Result              |             |
| 06 25 BUTCH<br>DUP | 6010       | Chromium | 0.060 JB   | mg/L  | 0.10 U              | 3           |

J -laboratory flag; result is less than the reporting limit but greater than the method detection limit and the concentration is an approximate value.

mg/L – milligram per liter

B – lab flag; Compound was found in the blank and sample

# Method 7470A Mercury Qualifications - None

# Wet Chemistry Parameters

# **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius and pH >2 upon receipt, COD and HEM)

7 = Field Duplicate RPD exceeded

| Sample ID   | Analytical | Analyte              | Laboratory | Units | Validated/Qualified | Reason Code |
|-------------|------------|----------------------|------------|-------|---------------------|-------------|
|             | Test       |                      | Result     |       | Result              |             |
| 06 25 BUTCH | 1664A      | HEM                  | 79.2       | mg/L  | 79.2 J              | 1,7         |
|             | 351.2      | Total Kjeldahl       | 750        | mg/L  | 750 J               | 1           |
|             | 353.2      | Nitrate Nitrite as N | 0.31U      | mg/L  | 0.31 UJ             | 1,7         |
|             | 365.3      | Phosphorous, Total   | 63         | mg/L  | 63 J                | 1           |
|             | 420.1      | Phenolics, Total     | 0.14       | mg/L  | 0.14 J              | 1           |
|             | 4500 CN    | Cyanide, Total       | 0.025      | mg/L  | 0.025 J             | 1,7         |
|             | E          |                      |            |       |                     |             |
|             |            | Ammonia (as N)       | 82         | mg/L  | 82 J                | 1           |
|             | 4500       | Ammonia as NH3       | 100        | mg/L  | 100 J               | 1           |
|             | NH3 D      |                      |            | -     |                     |             |
|             | 5220D      | Chemical Oxygen      | 8600       | mg/L  | 8600 J              | 1           |
|             | 2540E      | Total Volatile       | 7100       | mg/L  | 7100 J              | 1           |
|             | 2540B      | Total Solids         | 10000      | mg/L  | 10000 J             | 1           |
|             |            | Total Nitrogen       | 750        | mg/L  | 750 J               | 1           |
| 06 25 OD    | 1664A      | HEM                  | 11.2       | mg/L  | 11.2 J              | 1           |
| STREAMS     | 351.2      | Total Kjeldahl       | 3700       | mg/L  | 3700 J              | 1           |
|             |            | Nitrogen             |            | -     |                     |             |
|             | 353.2      | Nitrate Nitrite as N | 0.31U      | mg/L  | 0.31 UJ             | 1           |
|             | 365.3      | Phosphorous, Total   | 570        | mg/L  | 570 J               | 1           |
|             | 420.1      | Phenolics, Total     | 2.5        | mg/L  | 2.5 J               | 1           |
|             |            | Recoverable          |            | _     |                     |             |

| Sample ID   | Analytical    | Analyte                         | Laboratory | Units | Validated/Qualified | Reason Code |
|-------------|---------------|---------------------------------|------------|-------|---------------------|-------------|
|             | Test          |                                 | Result     |       | Result              |             |
|             | 4500 CN<br>E  | Cyanide, Total                  | 0.018J     | mg/L  | 0.018 J             | 1           |
|             |               | Ammonia (as N)                  | 1700       | mg/L  | 1700 J              | 1           |
|             | 4500<br>NH3 D | Ammonia as NH3                  | 2100       | mg/L  | 2100 J              | 1           |
|             | 5220D         | Chemical Oxygen<br>Demand       | 51000      | mg/L  | 51000 J             | 1           |
|             | 2540E         | Total Volatile<br>Solids        | 15000      | mg/L  | 15000 J             | 1           |
|             | 2540B         | Total Solids                    | 33000      | mg/L  | 33000 J             | 1           |
|             |               | Total Nitrogen                  | 3700       | mg/L  | 3700 J              | 1           |
| 06 25 BUTCH | 1664A         | HEM                             | 203        | mg/L  | 203 J               | 1,7         |
| DUP         | 351.2         | Total Kjeldahl<br>Nitrogen      | 820        | mg/L  | 820 J               | 1           |
|             | 353.2         | Nitrate Nitrite as N            | 10         | mg/L  | 10 J                | 1,7         |
|             | 365.3         | Phosphorous, Total              | 66         | mg/L  | 66 J                | 1           |
|             | 420.1         | Phenolics, Total<br>Recoverable | 0.18       | mg/L  | 0.18 J              | 1           |
|             | 4500 CN<br>E  | Cyanide, Total                  | 0.013U     | mg/L  | 0.013 UJ            | 1,7         |
|             |               | Ammonia (as N)                  | 82         | mg/L  | 82 J                | 1           |
|             | 4500<br>NH3 D | Ammonia as NH3                  | 100        | mg/L  | 100 J               | 1           |
|             | 5220D         | Chemical Oxygen<br>Demand       | 9100       | mg/L  | 9100 J              | 1           |
|             | 2540E         | Total Volatile<br>Solids        | 5600       | mg/L  | 5600 J              | 1           |
|             | 2540B         | Total Solids                    | 8500       | mg/L  | 8500 J              | 1           |
|             |               | Total Nitrogen                  | 820        | mg/L  | 820 J               | 1           |
|             | 1664A         | HEM                             | 120        | mg/L  | 120 J               | 1           |

| Analytical    | Analyte  | Laboratory   | Units  | Validated/Qualified  | Reason Code   |
|---------------|--|--|--|--|---|
| Test          |  | Result   |  | Result   |   |
| 351.2         | Total Kjeldahl   | 470  | mg/L   | 470 J  | 1   |
|               |  |  |  |  |   |
| 353.2         | Nitrate Nitrite as N   | 0.31   | mg/L   | 0.31 J   | 1   |
| 365.3         | Phosphorous, Total   | 58   | mg/L   | 58 J   | 1   |
| 420.1         | Phenolics, Total   | 0.088  | mg/L   | 0.088 J  | 1   |
|               | Recoverable  |  |  |  |   |
| 4500 CN       | Cyanide, Total   | 0.013  | mg/L   | 0.013 J  | 1   |
| E             |  |  |  |  |   |
|               | Ammonia (as N)   | 28   | mg/L   | 28 J   | 1   |
| 4500          | Ammonia as NH3   | 34   | mg/L   | 34 J   | 1   |
| NH3 D         |  |  |  |  |   |
| 5220D         | Chemical Oxygen  | 6000   | mg/L   | 6000 J   | 1   |
|               | Demand   |  |  |  |   |
| 2540E         | Total Volatile   | 2300   | mg/L   | 2300 J   | 1   |
|               | Solids   |  |  |  |   |
| 2540B         | Total Solids   | 5000   | mg/L   | 5000 J   | 1   |
|               | Total Nitrogen   | 470  | mg/L   | 470 J  | 1   |
| 1664A         | HEM  | 8.8  | mg/L   | 8.8 J  | 1   |
| 351.2         | Total Kjeldahl   | 4200   | mg/L   | 4200 J   | 1   |
|               | Nitrogen   |  |  |  |   |
| 353.2         | Nitrate Nitrite as N   | 0.31   | mg/L   | 0.31 J   | 1   |
| 365.3         | Phosphorous, Total   | 630  | mg/L   | 630 J  | 1   |
| 420.1         | Phenolics, Total   | 3.3  | mg/L   | 3.3 J  | 1   |
|               | Recoverable  |  | -  |  |   |
| 4500 CN       | Cyanide, Total   | 0.021J   | mg/L   | 0.021 J  | 1   |
| E             |  |  |  |  |   |
|               |  |  | mg/L   |  | 1   |
| 4500<br>NH3 D | Ammonia as NH3   | 2900   | mg/L   | 2900 J   | 1   |
|               | 351.2<br>353.2<br>365.3<br>420.1<br>4500 CN<br>E<br><br>4500<br>NH3 D<br>5220D<br>2540E<br>2540E<br>2540B<br><br>1664A<br>351.2<br>353.2<br>365.3<br>420.1<br>4500 CN<br>E<br> | 351.2Total Kjeldahl<br>Nitrogen353.2Nitrate Nitrite as N365.3Phosphorous, Total420.1Phenolics, Total<br>Recoverable4500 CNCyanide, Total<br>EAmmonia (as N)4500Ammonia as NH3NH3 DD5220DChemical Oxygen<br>Demand2540ETotal Volatile<br>Solids2540BTotal SolidsTotal SolidsTotal Nitrogen1664AHEM351.2Total Kjeldahl<br>Nitrogen353.2Nitrate Nitrite as N365.3Phosphorous, Total<br>Recoverable420.1Phenolics, Total<br>Recoverable4500 CNCyanide, Total<br>Recoverable4500 CNCyanide, Total<br>Recoverable4500 CNAmmonia (as N)4500Ammonia (as N) | 351.2Total Kjeldahl<br>Nitrogen470353.2Nitrate Nitrite as N0.31365.3Phosphorous, Total58420.1Phenolics, Total<br>Recoverable0.0884500 CNCyanide, Total0.013EAmmonia (as N)284500Ammonia as NH34500Ammonia as NH334NH3 D60005220DChemical Oxygen<br>Demand60002540ETotal Volatile<br>Solids23002540BTotal Solids5000Total Nitrogen4701664AHEM<br>Nitrogen8.8351.2Total Kjeldahl<br>Nitrogen4200Nitrogen3.3630420.1Phenolics, Total<br>Recoverable3.3420.1Phenolics, Total<br>Recoverable3.34500 CN<br>Cyanide, Total0.021JEAmmonia (as N)24004500Ammonia as NH32900 | 351.2Total Kjeldahl<br>Nitrogen470mg/L353.2Nitrate Nitrite as N0.31mg/L365.3Phosphorous, Total58mg/L420.1Phenolics, Total<br>Recoverable0.088mg/L4500 CNCyanide, Total0.013mg/LEAmmonia (as N)28mg/L4500Ammonia as NH334mg/L5220DChemical Oxygen<br>Demand6000mg/L5240ETotal Volatile<br>Solids2300mg/LTotal Volatile<br>Solids5000mg/L2540BTotal Solids5000mg/LTotal Nitrogen470mg/L1664AHEM8.8mg/L353.2Nitrate Nitrite as N0.31mg/L353.2Nitrate Nitrite as N0.31mg/L365.3Phosphorous, Total630mg/L4500 CNCyanide, Total3.3mg/L4500 CNCyanide, Total3.2mg/L4500 CNCyanide, Total3.2mg/L4500 CNCyanide, Total3.2mg/L4500Ammonia (as N)2400mg/L4500Ammonia as NH32900mg/L | 351.2       Total Kjeldahl<br>Nitrogen       470       mg/L       470 J         353.2       Nitrate Nitrite as N       0.31       mg/L       0.31 J         365.3       Phosphorous, Total       58       mg/L       58 J         420.1       Phenolics, Total<br>Recoverable       0.088       mg/L       0.088 J         4500 CN       Cyanide, Total       0.013       mg/L       0.013 J         E        Ammonia (as N)       28       mg/L       28 J         4500       Ammonia as NH3       34       mg/L       34 J         NH3 D         6000       mg/L       6000 J         5220D       Chemical Oxygen<br>Demand       6000       mg/L       2300 J         2540E       Total Volatile<br>Solids       2300       mg/L       5000 J          Total Solids       5000       mg/L       470 J         1664A       HEM       8.8       mg/L       8.8 J         351.2       Total Kjeldahl       4200       mg/L       4200 J         Nitrogen       43.3       mg/L       0.31 J       33 J         353.2       Nitrate Nitrite as N       0.31       mg/L       630 J |

| Sample ID  | Analytical    | Analyte                         | Laboratory | Units | Validated/Qualified | Reason Code |
|------------|---------------|---------------------------------|------------|-------|---------------------|-------------|
|            | Test          |                                 | Result     |       | Result              |             |
|            | 5220D         | Chemical Oxygen<br>Demand       | 42000      | mg/L  | 42000 J             | 1           |
|            | 2540E         | Total Volatile<br>Solids        | 17000      | mg/L  | 17000 J             | 1           |
|            | 2540B         | Total Solids                    | 33000      | mg/L  | 33000 J             | 1           |
|            |               | Total Nitrogen                  | 4200       | mg/L  | 4200 J              | 1           |
| BUTCHER    | 1664A         | HEM                             | 138        | mg/L  | 138 J               | 1           |
| (6/27/19)  | 351.2         | Total Kjeldahl<br>Nitrogen      | 450        | mg/L  | 450 J               | 1           |
|            | 353.2         | Nitrate Nitrite as N            | 0.31       | mg/L  | 0.31 J              | 1           |
|            | 365.3         | Phosphorous, Total              | 50         | mg/L  | 50 J                | 1           |
|            | 420.1         | Phenolics, Total<br>Recoverable | 0.083      | mg/L  | 0.083 J             | 1           |
|            | 4500 CN<br>E  | Cyanide, Total                  | 0.013      | mg/L  | 0.013 J             | 1           |
|            |               | Ammonia (as N)                  | 35         | mg/L  | 35 J                | 1           |
|            | 4500<br>NH3 D | Ammonia as NH3                  | 43         | mg/L  | 43 J                | 1           |
|            | 5220D         | Chemical Oxygen<br>Demand       | 5500       | mg/L  | 5500 J              | 1           |
|            | 2540E         | Total Volatile<br>Solids        | 6900       | mg/L  | 6900 J              | 1           |
|            | 2540B         | Total Solids                    | 12000      | mg/L  | 12000 J             | 1           |
|            |               | Total Nitrogen                  | 450        | mg/L  | 450 J               | 1           |
| OD STREAMS | 1664A         | HEM                             | 52         | mg/L  | 52 J                | 1           |
| (06/27/19) | 351.2         | Total Kjeldahl<br>Nitrogen      | 4200       | mg/L  | 4200 J              | 1           |
|            | 353.2         | Nitrate Nitrite as N            | 0.31       | mg/L  | 0.31 J              | 1           |
|            | 365.3         | Phosphorous, Total              | 690        | mg/L  | 690 J               | 1           |

| Sample ID | Analytical<br>Test | Analyte                         | Laboratory<br>Result | Units | Validated/Qualified<br>Result | Reason Code |
|-----------|--------------------|---------------------------------|----------------------|-------|-------------------------------|-------------|
|           | 420.1              | Phenolics, Total<br>Recoverable | 7.5                  | mg/L  | 7.5 J                         | 1           |
|           | 4500 CN<br>E       | Cyanide, Total                  | 0.032                | mg/L  | 0.032 J                       | 1           |
|           |                    | Ammonia (as N)                  | 2400                 | mg/L  | 2400 J                        | 1           |
|           | 4500<br>NH3 D      | Ammonia as NH3                  | 3000                 | mg/L  | 3000 J                        | 1           |
|           | 5220D              | Chemical Oxygen<br>Demand       | 43000                | mg/L  | 43000 J                       | 1           |
|           | 2540E              | Total Volatile<br>Solids        | 15000                | mg/L  | 15000 J                       | 1           |
|           | 2540B              | Total Solids                    | 13000                | mg/L  | 13000 J                       | 1           |
|           |                    | Total Nitrogen                  | 4200                 | mg/L  | 4200 J                        | 1           |

mg/L – milligram per liter

U - the analyte was not detected at or above the reported value

J -laboratory flag; result is less than the reporting limit but greater than the method detection limit and the concentration is an approximate value.

| Sample | Analytic | Analytes        | Results | RPD | Validated/Qualifi | Reason |
|--------|----------|-----------------|---------|-----|-------------------|--------|
| ID     | al Test  |                 | (mg/L)  |     | ed Result         | Code   |
| 06 25  | 1664A    | HEM             | 79.2    |     | 79.2 J            | 7      |
| BUTCH  | 351.2    | Total Kjeldahl  | 750     |     | NA                | NA     |
|        |          | Nitrogen        |         |     |                   |        |
|        | 353.2    | Nitrate Nitrite | 0.31U   |     | 0.31 UJ           | 7      |
|        |          | as N            |         |     |                   |        |
|        | 365.3    | Phosphorous,    | 63      | ]   | NA                | NA     |
|        | 420.1    | Phenolics,      | 0.14    |     | NA                | NA     |

#### Field Duplicate Assessment = Acceptance criteria relative percent difference (RPD) <30%

| Sample       | Analytic      | Analytes                           | Results | RPD  | Validated/Qualifi | Reason |
|--------------|---------------|------------------------------------|---------|------|-------------------|--------|
| ID           | al Test       |                                    | (mg/L)  |      | ed Result         | Code   |
|              | 4500<br>CN E  | Cyanide, Total                     | 0.025   |      | 0.025 J           | 7      |
|              |               | Ammonia (as                        | 82      |      | NA                | NA     |
|              | 4500<br>NH3 D | Ammonia as<br>NH3                  | 100     |      | NA                | NA     |
|              | 5220D         | Chemical                           | 8600    |      | NA                | NA     |
|              | 2540E         | Total Volatile                     | 7100    |      | NA                | NA     |
|              | 2540B         | Total Solids                       | 10000   |      | NA                | NA     |
|              |               | Total Nitrogen                     | 750     |      | NA                | NA     |
| 06 25        | 1664A         | HEM                                | 203     | 68%  | 203 J             | 7      |
| BUTCH<br>DUP | 351.2         | Total Kjeldahl<br>Nitrogen         | 820     | 8.9% | NA                | NA     |
|              | 353.2         | Nitrate Nitrite<br>as N            | 10      | NC   | 10 J              | 7      |
|              | 365.3         | Phosphorous,<br>Total              | 66      | 4.6% | NA                | NA     |
|              | 420.1         | Phenolics,<br>Total<br>Recoverable | 0.18    | 25%  | NA                | NA     |
|              | 4500<br>CN E  | Cyanide, Total                     | 0.013U  | NC   | 0.013 UJ          | 7      |
|              |               | Ammonia (as<br>N)                  | 82      | 0%   | NA                | NA     |
|              | 4500<br>NH3 D | Ammonia as<br>NH3                  | 100     | 0%   | NA                | NA     |
|              | 5220D         | Chemical<br>Oxygen<br>Demand       | 9100    | 5.6% | NA                | NA     |

| Sample<br>ID | Analytic<br>al Test | Analytes                 | Results<br>(mg/L) | RPD  | Validated/Qualifi<br>ed Result | Reason<br>Code |
|--------------|---------------------|--------------------------|-------------------|------|--------------------------------|----------------|
|              | 2540E               | Total Volatile<br>Solids | 5600              | 24%  | NA                             | NA             |
|              | 2540B               | Total Solids             | 8500              | 16%  | NA                             | NA             |
|              |                     | Total Nitrogen           | 820               | 8.9% | NA                             | NA             |

NA – not applicable

NC-not calculable

#### Method NO3NO2 Calc – Nitrogen, Nitrate-Nitrite Qualifications

### **Reason Codes**

1 = preservation (received outside of temperature >10 degrees Celsius)

2= holding time exceedance

| Sample ID   | Analytical | Analyte              | Laboratory | Units | Validated/Qualified | Reason Code |
|-------------|------------|----------------------|------------|-------|---------------------|-------------|
|             | Test       |                      | Result     |       | Result              |             |
| 06 25 BUTCH | NO3NO2     | Nitrate as N         | 5.5U H     | mg/L  | 5.5 R               | 1,2         |
|             | Calc       | Nitrite as N         | 2.5 U H    | mg/L  | 2.5 R               | 1,2         |
|             |            | Nitrate Nitrite as N | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |
| 06 25 OD    | NO3NO2     | Nitrate as N         | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
| STREAMS     | Calc       | Nitrite as N         | 0.50 U H   | mg/L  | 0.50 R              | 1,2         |
|             |            | Nitrate Nitrite as N | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
| 06 25 BUTCH | NO3NO2     | Nitrate as N         | 0.55 U H   | mg/L  | 0.55 R              | 1,2         |
| DUP         | Calc       | Nitrite as N         | 0.25 U H   | mg/L  | 0.25 R              | 1,2         |
|             |            | Nitrate Nitrite as N | 0.55 U H   | mg/L  | 0.55 R              | 1,2         |
| BUTCHER     | NO3NO2     | Nitrate as N         | 5.5 U H    | mg/L  |                     | 1,2         |
| (6/26/19)   | Calc       | Nitrite as N         | 2.5 U H    | mg/L  | 2.5 R               | 1,2         |
|             |            | Nitrate Nitrite as N | 1.1 UH     | mg/L  | 1.1 R               | 1,2         |
| OD STREAMS  |            | Nitrate as N         | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |

| Sample ID  | Analytical | Analyte              | Laboratory | Units | Validated/Qualified | Reason Code |
|------------|------------|----------------------|------------|-------|---------------------|-------------|
|            | Test       |                      | Result     |       | Result              |             |
| (6/26/19)  | NO3NO2     | Nitrite as N         | 2.5 U H    | mg/L  | 2.5 R               | 1,2         |
|            | Calc       | Nitrate Nitrite as N | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |
| BUTCHER    | NO3NO2     | Nitrate as N         | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
| (6/27/19)  | Calc       | Nitrite as N         | 0.50 U H   | mg/L  | 0.50 R              | 1,2         |
|            |            | Nitrate Nitrite as N | 1.1 U H    | mg/L  | 1.1 R               | 1,2         |
| OD STREAMS | NO3NO2     | Nitrate as N         | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |
| (06/27/19) | Calc       | Nitrite as N         | 2.5 U H    | mg/L  | 2.5 R               | 1,2         |
|            |            | Nitrate Nitrite as N | 5.5 U H    | mg/L  | 5.5 R               | 1,2         |

mg/L – milligram per liter

U - the analyte was not detected at or above the reported value

H – Lab flag; Sample was prepped or analyzed beyond the specified holding time

Field Duplicate Assessment – no qualifications RPD = 0%

#### ATTACHMENT 1 DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY Assigned by Geosyntec's Data Validation Team

#### **DATA QUALIFIER DEFINITIONS**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.
- J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

#### ATTACHMENT 2 DATA VALIDATION REASON CODES Assigned by Geosyntec's Data Validation Team

| Valid Value | Description   |
|-------------|---|
| 1           | Preservation requirement not met                            |
| 2           | Analysis holding time exceeded                              |
| 3           | Blank contamination (i.e., method, trip, equipment, etc.)   |
|             | Matrix spike/matrix spike duplicate recovery or RPD outside |
| 4           | limits  |
| 5           | LCS recovery outside limits                                 |
| 6           | Surrogate recovery outside limits                           |
| 7           | Field Duplicate RPD exceeded                                |
| 8           | Serial dilution percent difference exceeded                 |
| 9           | Calibration criteria not met                                |
| 10          | Linear range exceeded                                       |
| 11          | Internal standard criteria not met                          |
| 12          | Lab duplicates RPD exceeded                                 |
| 13          | Other   |

RPD-relative percent difference

# APPENDIX C Pollutant Minimization Report 2010

2019 08 22 Permit Application Attachment 2 - 2019 OD Results

Prepared for:

StarKist Samoa

NPDES Brmit AS0000019

Submitted to:

U.S. Evironmental Potection Agency

American Samoa Environmental Potection Agency

Prepared by:



glatzel da costa (**gdc**) P.O. Box 1238 Trinidad, CA 95570

14 December **Q**10

# StarKist Samoa Pollutant Minimization Plan: Final Report

# 1. Introduction

The StarKist Samoa (SKS) cannery discharges treated process wastewater through the Joint Cannery Outfall (JCO) into Outer Pago Pago Harbor under a National Pollutant Discharge Elimination Permit (NPDES: permit number AS0000019). Special condition A.2 of Part V of the current SKS NPDES permit requires the development and implementation of a Pollutant Minimization Plan (PMP). This report describes the sampling done based on the workplan<sup>1</sup> submitted to U.S. Environmental Protection Agency (USEPA) and the American Samoa Environmental Protection Agency (ASEPA). The report also presents the action proposed based on the result of the sampling. The NPDES permit requires assessment of copper, mercury, and zinc<sup>2</sup>.

### 1.1 Purpose

The purpose of the PMP is to assess and identify the sources of pollutants in different waste streams in the SKS cannery and develop a plan tominimize the entry of these pollutants into the facility's wastewater and subsequent discharge into the receiving water. As stated in the NPDES permit the goal of the PMP "shall be to achieve as soon as practicable for the discharge tomeet water quality standards [for] copper, zinc, and mercury with a minimally sized mixing zone."

### 1.2 Background

SKS has two waste streams consisting of high strength waste and low strength waste. High strength waste is not discharged through the JCO (and is not regulated under NPDES permit AS0000019). Therefore, only the low strength waste stream is addressed in this report.

Whole effluent toxicity (WET) testing has been conducted on the final effluent from the StarKist Samoa cannery since the initial issuance of the NPDES permit. Prior to the current permit cycle (through 2007) acute WET testing was conducted on a regular basis. The source of acute toxicity was determined to the ammonia, which was and still is regulated by an effluent limitation and an approved mixing zone. The current permit requires semi-annual chronic WET testing, which has been done since May 2008. Testing for Cu, Zn, and Hg is also done on the samples collected for WET testing.

<sup>&</sup>lt;sup>1</sup> Workplan for the StarKist Samoa Pollutant Minimization Plan. Prepared for StarKist Samoa. Submitted to U.S. Environmental Protection Agency and American Samoa Environmental Protection Agency. Prepared by gdc. 14 July 2010.

<sup>&</sup>lt;sup>2</sup> With the exception of ammonia, no other toxic parameters of concern have been identified in previous priority pollutant scans. Additional priority pollutant scans will be performed as required by the current NPDES permit in year four of the permit term. The presence of ammonia is recognized as an unavoidable consequence of fish processing and is controlled by discharge limitations and an approved mixing zone.

Priority pollutant scans and routine discharge monitoring reports (DMRs) monitoring of the effluent have indicated that, in addition to tammonia, levels of copper, zinc, and mercury exceed or have the potential to exceed the American Samoa Water Quality Standards (ASWQS) and/or the USEPA National Recommended Water Quality Criteria (NRWQC) for these parameters. All of the parameters in question are currently discharged under NPDES permit limitations into approved mixing zones. The mixing zones are small, well within the zone of initial dilution (ZID), and result in compliance with water quality criteria within few seconds after discharge.

### 1.3 Approach

The approach the PMP was described in the PMP workplan and involves the sampling and analysis of in-plant waste streams at locations that provide information required todentify the sources of the parameters addressed (Cu, Zn, and Hg). The sampling was done at nine locations within the plant over a normal processing period at three hour intervals. These data were examined to identify potential sources.

# 1.4 Scope and Limitations

As mentioned above only the waste streams that are treated and discharged through the JCO were included. High strength waste streams were not sampled. This report describes the sampling procedures (Section 2), the results of the sample analyses (Section 3), and the proposed actions deemed practicable to address the discharge of the parameters.

# 2. Sampling Procedures

The sampling locations, frequency, methods, management, and analytical methods are described in this section.

# 2.1 Sampling Locations

Two sites were sampled to characterize the incoming seawater and raw freshwater used in cannery operations. In-plant process wastewater streams were selected based on the principal sources of contributions to the effluent and operational characteristics of the cannery as summarized in Table 1. A flow diagram for the SKS facility is shown in Figure 1.

The primary effluent streams, which make up the total flow to utfall, include thaw, butchering, spray cooling, can washer, boiler blowdown, and washwater. These six primary effluent streams, the final effluent at the permit specified sampling point 001, and the external input sources create a total of nine sources that were sampled. The selected sampling points are shown schematically in Figure 1.Actual physical sampling points representing these flows were determined based on consultation with SKS operations staff. The sampling points were:

- Point 1: Incoming freshwater prior toperations to be used as a control sample; sample was taken from the ASPA line entering the StarKist plant.
- Point 2: Incoming seawater prior toperations to be used as a control sample; sample was taken from the 6" PVC pipe at the thawing area that delivers water from the sea water pump.
- Point 3: Flow from thaw water; sample was taken in front of thaw area #7, where flows from other thaw tanks meet before flowing to the sump pit.
- Point 4: Flow from butchering (including flow from freezer if a combined sampling site is available); sample was taken in between butchering table #1 & #2 where the flows meet before flowing table sump pit.
- Point 5: Flow from spray cooling; sample was taken next to cooling zone #15 where all the flows from other cooling zones meet.
- Point 6: Can washer output; sample was taken athe can washer area next to the stairs that leads to the old QC office.
- Point 7: Flow from boiler blowdown; sample was taken just outside the boilers on the left side where the blow down flow exits.
- Point 8: Flow from wash down; sample was taken from the flow exiting the packing room before entering the sump pit.
- Point 9: Total effluent flow following DAF treatment at sampling point 001; sample was taken from the flow entering the wet well.

|                     | Table 1. Table of Flows, Sources, and Treatment Technologies<br>for StarKist Samoa, Inc Outfall No. 001 |   |   |                             |                       |  |  |  |
|---------------------|---|---|---|-----------------------------|-----------------------|--|--|--|
| Op                  | perations Contributing to Flow  | Percent   | of Flow                                 | Trea                        | atment                |  |  |  |
| ltem <sup>3</sup>   | Description   | Total<br>Process<br>Flow                            | Flow<br>Through<br>Outfall <sup>2</sup> | Description                 | Codes⁴                |  |  |  |
| а                   | Freezer Condensate  | 0.4   | 0.4                                     | DAF Unit                    | 1-H, 2-C, 4-B         |  |  |  |
| b                   | Thaw Water +<br>Can Washer +<br>Boiler Blowdown   | 63.7  | 66.6                                    | DAF Unit                    | 1-H, 2-C, 4-B         |  |  |  |
| С                   | Butchering  | 1.7   | 1.8                                     | DAF Unit                    | 1-H, 2-C, 4-B         |  |  |  |
| d                   | Precooker   | 3.5   | 0.0                                     | Ocean Disposal <sup>5</sup> |                       |  |  |  |
| е                   | Spray Cooling   | 4.3   | 4.5                                     | DAF Unit                    | 1-H, 2-C, 4-B         |  |  |  |
| f                   | Press Scrap Reduction   | Scrap Reduction 0.8 0.0 Ocean Disposal <sup>5</sup> |   |                             | Disposal <sup>5</sup> |  |  |  |
| g                   | Can Washer + Boiler Blowdown  | (included in b)                                     |   | DAF Unit                    | 1-H, 2-C, 4-B         |  |  |  |
| h                   | h Washdown 25.6 26.7 DAF Unit 1-H, 2-C, 4   |   |   |                             |                       |  |  |  |
| <sup>1</sup> From N | <sup>1</sup> From NPDES renewal application Form 2C, Item II.B.   |   |   |                             |                       |  |  |  |

<sup>2</sup> Permit basis is a maximum daily flow is 2.9 mgd.

<sup>3</sup> Items referenced to Figure 1.

<sup>4</sup> Codes from Table 2C-1 (Form 2C) of NPDES permit application: 1-H = Flotation; 2-C = Chemical Precipitation;

4-B = Ocean Discharge Through Outfall.

<sup>5</sup> Barged to permitted offshore ocean dumping site - permit OD-93-01 Special

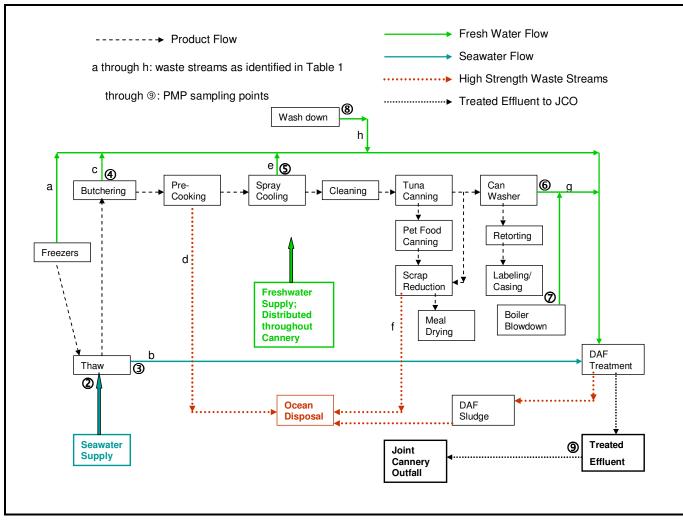


Figure 1 Flow Diagram and Proposed Sampling Points

# 2.2 Sampling Frequency

Four samples were collected at each sampling point. Samples were collected at three hour intervals during a normal production day. Nominal times of sampling were 09:00, 12:00, 15:00, and 18:00. Samples were taken within 20 minutes of the target times at all locations.

# 2.3 Sampling Methods

Sample bottles were prepared and supplied by the analytical laboratory conducting the analyses. Two sample bottles were filled for each sampling period at each of the designated sampling points, one for zinc and copper, and the other for low level mercury analysis. Depending on the effluent sampling point, sample bottles were filled directly from a spigot or lowered directly into the effluent stream and filled. Filled bottles were labeled with time, date, and sample location. Samples were stored on ice or refrigerated following collection.

# 2.4 Sample Management and Shipping

Samples were kept on ice until shipping. Samples were shipped the analytical laboratory (Columbia Analytical Services) by express package shipment (DHL) in ice chests with bagged ice. The chain-of-custody form is included with the laboratory report (Attachment 1).

# 2.5 Sample Analysis

All samples were analyzed for total metal concentration. Samples were analyzed as follows:

| Copper:  | Method 200.8 (Preconcentration and ICP-MS) with a target detection limit of ${\leq}0.01~\mu\text{g/l}$                              |
|----------|---|
| Zinc:    | Method 200.8 (Preconcentration and ICP-MS) with a target detection limit of ${\leq}0.1~\mu\text{g/l}$                               |
| Mercury: | Method 1631E (Oxidation, Purge and Trap, and CVAFS) with a target detection limit of $\leq 0.1 \text{ ng/l} (0.0001 \mu\text{g/l})$ |

# 3. Results of Analyses

Laboratory sampling results were assessed, summarized, and compared to the ASWQS criteria and NPDES permit limitations. The full laboratory report is included with all appropriate QA/QC documentation in Attachment 1 (provided on CD-ROM). Based on the results, potential sources of the three metals were identified. Applicable potential source control measures are described in Section 4.A discussion of the effluent values compared toroutine effluent monitoring is also presented.

#### 3.1 Mercury

Results for total mercury are shown in Table 2.The ASWQS<sup>3</sup> for total mercury is 0.050  $\mu$ g/l. The NPDES limitations for mercury are 1.80  $\mu$ g/l and 4.72  $\mu$ g/l for monthly average and daily maximum, respectively. None of the samples analyzed were reported with concentrations above the maximum daily NPDES limitations. Samples with concentrations above the ASWQS criterion are shaded in gold. The results are summarized as follows:

- Inflow water concentrations were below the ASWQS criterion. The fresh water supply to the cannery was 0.00060 µg/l (average of the four samples). The seawater inflow was typical of the receiving water as measured during the semi-annual receiving water in the vicinity of the discharge and at the reference station just outside the Harbor. For example the September 2010 receiving water values were between 0.00048 µg/l and 0.00937 µg/l. The average of the seawater supply concentrations for the four samples was 0.00276 µg/l, well below the criterion.
- In-plant waste stream concentrations were elevated for those streams where process water comes into direct contact with the tuna; thaw water, butchering, spray cooling, and washdown (in the packing room). The highest values reported were from the butchering operations.
- Effluent concentrations, following treatment, were above the ASWQS (but well below the effluent limitation) and nearly identical to the thaw water values. This is consistent with the relative volumes of the various in-plant flows with the thaw water and washdown being the primary contributors to the final effluent (see Table 1).

# 3.2 Copper

Results for total copper are shown in Table 2. The ASWQS for mercury is referenced to the NRWQC, which is  $3.73 \ \mu g/l^4$ . The NPDES limitations for copper are  $58.42 \ \mu g/l$  and  $117.42 \ \mu g/l$  for monthly average and daily maximum, respectively. None of the samples analyzed were reported with concentrations above the maximum daily NPDES limitations. Samples with concentrations above the ASWQS criterion are shaded in gold. The results are summarized as follows:

• Inflow fresh water concentrations were below the ASWQS criterion. The fresh water supply to the cannery was 0.869 µg/l (average of the four samples). The seawater inflow was <u>not</u> typical of the receiving water as measured during the semi-annual receiving water in the vicinity of the discharge and at the reference station just outside the Harbor. The values were elevated, and were the highest levels in any of the waste streams. During the September 2010 receiving water values were between 0.118 µg/l and 0.788 µg/l. Further investigation revealed that the seawater supply pump and the valves immediately upstream of the sampling point are treated with a copper based anti-seize compound, a normal and necessary practice for seawater supply lines. It is believed that the samples were inadvertently contaminated with the anti-seize compound and the samples are not representative of seawater influent copper concentrations.

<sup>&</sup>lt;sup>3</sup> American Samoa Water Quality Standards. 2005 Revision. Administrative Rule No. 006-2005. The criteria presented in this report are for Pago Pago Harbor:

<sup>&</sup>lt;sup>4</sup> The criteria continuous criterion (chronic effects criterion) and based on total recoverable copper using the default translator from dissolved to total in the NRWQC. The dissolved fraction criterion is 3.1 µg/l.

- In-plant waste stream concentrations were elevated for certain streams where process water comes into direct contact with the tuna; butchering, spray cooling, and washdown (in the packing room). Elevated concentrations were not apparent in the thaw water outflow (further indication the sea water inflow samples were contaminated). The highest values reported were from the butchering operations.
- Effluent concentrations, following treatment were below the ASWQS and well below the effluent limitation. Concentrations were somewhat elevated compared to the thaw water values, and reflect the contributions from the butchering, spray cooling, and washdown streams. The results are consistent with the relative volumes of the various in-plant flows with the washdown being the second most important contributor to the final effluent (see Table 1).

#### 3.3 Zinc

Results for total zinc are shown in Table 3. The ASWQS for zinc is referenced to the NRWQC, which is  $85.62 \ \mu g/l^5$ . The NPDES limitations for zinc are 1138  $\mu g/l$  and 2284  $\mu g/l$  for monthly average and daily maximum, respectively. None of the samples analyzed were reported with concentrations above the maximum daily NPDES limitations. Samples with concentrations above the ASWQS criterion are shaded in gold. The results are summarized as follows:

- Inflow fresh water concentrations were below the ASWQS criterion. The fresh water supply to the cannery was 9.84  $\mu$ g/l (average of the four samples). The seawater inflow was <u>not</u> typical of the receiving water as measured during the semi-annual receiving water in the vicinity of the discharge and at the reference station just outside the Harbor. The values were elevated above what was expected, but were not the highest levels in any of the waste streams. During the September 2010 receiving water values were between 8.47  $\mu$ g/l and 0.51  $\mu$ g/l. It is believed that some or all of the seawater influent samples may have been inadvertently contaminated similar to the case for copper described above, but not as severely. These values are not necessarily representative of seawater influent zinc concentrations.
- In-plant waste stream concentrations were elevated for most of the streams where process water comes into direct contact with the tuna and/or with galvanized equipment such as fish boxes, piping, and similar equipment. Elevated concentrations were reported for thaw water, butchering, spray cooling, and washdown (in the packing room). Zinc concentrations were also elevated for the boiler blowdown, but not for the can washer outflow stream. The highest values reported were from the butchering operations.
- Effluent concentrations, following treatment were below the ASWQS for all but one sample and well below the effluent limitation. Concentrations were somewhat elevated compared to the thaw water values, and reflect the contributions from the other in-plant streams. The results appear consistent with the relative volumes of the various in-plant flows with the washdown being the second most important contributor to the final effluent (see Table 1).

<sup>&</sup>lt;sup>5</sup> The criteria continuous criterion (chronic effects criterion) and based on total recoverable zinc using the default translator from dissolved to total in the NRWQC. The dissolved fraction criterion is 81 μg/l.

|  | ercury (total, µg/l |       |                        |   |
|--|---------------------|-------|------------------------|---|
| Waste Stream   | Sample              | Time  | Resul                  | t |
|  | SKS-1a              | 09:08 | 0.00058                | J |
|  | SKS-1b              | 12:08 | 0.00053                | J |
| Butchering Outflow<br>Spray Cooling Outflow<br>Can Washer Outflow        | SKS-1c              | 15:08 | 0.00063                | J |
|  | SKS-1d              | 18:08 | 0.00066                | J |
|  | Average             |       | 0.00060                |   |
|  | SKS-2a              | 09:12 | 0.00492                | = |
| Seawater Supply  | SKS-2b              | 12:12 | 0.00352                | = |
| Seawater Supply  | SKS-2c              | 15:12 | 0.00139                | = |
|  | SKS-2d              | 18:12 | 0.00121                | = |
|  | Average             |       | 0.00276                |   |
|  | SKS-3a              | 09:00 | 0.128                  | = |
|  | SKS-3b              | 12:00 | 0.162                  | = |
| Thaw Water Outflow   | SKS-3c              | 15:00 | 0.115                  | = |
|  | SKS-3d              | 18:00 | 0.0652                 | = |
|  | Average             |       | 0.1176                 |   |
|  | SKS-4a              | 09:02 | 2.260                  | = |
|  | SKS-4b              | 12:02 | 2.160                  | = |
| Butchering Outflow   | SKS-4c              | 15:02 | 0.132                  | = |
|  | SKS-4d              | 18:02 | 0.390                  | = |
|  | Average             |       | 1.2355                 |   |
|  | SKS-5a              | 09:04 | 0.042                  | = |
|  | SKS-5b              | 12:04 | 0.263                  | = |
| Spray Cooling Outflow  | SKS-5c              | 15:04 | 0.0255                 | = |
| Spray Cooling Outliow  | SKS-5d              | 18:04 | 0.0611                 | = |
|  | Average             |       | 0.0979                 |   |
|  | SKS-6a              | 09:15 | 0.00118                | = |
|  | SKS-6b              | 12:15 | 0.00143                | = |
| Can Washer Outflow   | SKS-6c              | 15:15 | 0.00117                | = |
|  | SKS-6d              | 18:15 | 0.00104                | = |
|  | Average             |       | 0.001205               |   |
|  | SKS-7a              | 09:17 | 0.00375                | = |
|  | SKS-7b              | 12:17 | 0.00468                | = |
| Boiler Blowdown  | SKS-7c              | 15:17 | 0.00105                | = |
| haw Water Outflow Butchering Outflow Bran Washer Outflow Boiler Blowdown | SKS-7d              | 18:17 | 0.00286                | = |
|  | Average             |       | 0.003085               |   |
|  | SKS-8a              | 09:06 | 0.255                  | = |
|  | SKS-8b              | 12:06 | 0.233                  | = |
| Washdown   | SKS-8c              | 15:06 | 0.438                  | = |
|  | SKS-8d              | 18:06 | 0.247                  | = |
|  | Average             | 10.00 | 0.292                  | _ |
|  | SKS-9a              | 09:20 |                        |   |
|  | SKS-9a              | 12:20 | <u>0.0973</u><br>0.119 | = |
| Outfall Effluent   | SKS-90              | 12:20 |                        | = |
|  |                     |       | 0.112                  | = |
|  | SKS-9d              | 1820  | 0.125                  | = |
|  | Average             |       | 0.1133                 |   |

| Table 3. Copp                                       | er (total, µg/l | )     |        |   |
|---|-----------------|-------|--------|---|
| Waste Stream  | Sample          | Time  | Resul  | t |
|   | SKS-1a          | 09:08 | 1.01   | = |
|   | SKS-1b          | 12:08 | 0.866  | = |
| Fresh Water Supply                                  | SKS-1c          | 15:08 | 0.861  | = |
|   | SKS-1d          | 18:08 | 0.739  | = |
|   | Average         |       | 0.869  |   |
|   | SKS-2a          | 09:12 | 16.0   | = |
|   | SKS-2b          | 12:12 | 50.3   | = |
| Seawater Supply                                     | SKS-2c          | 15:12 | 8.910  | = |
|   | SKS-2d          | 18:12 | 7.090  | = |
|   | Average         |       | 20.575 |   |
|   | SKS-3a          | 09:00 | 0.894  | = |
|   | SKS-3b          | 12:00 | 1.460  | = |
| Thaw Water Outflow                                  | SKS-3c          | 15:00 | 0.761  | = |
|   | SKS-3d          | 18:00 | 0.910  | = |
|   | Average         |       | 1.006  |   |
|   | SKS-4a          | 09:02 | 24.9   | = |
|   | SKS-4b          | 12:02 | 29.8   | = |
| Butchering Outflow                                  | SKS-4c          | 15:02 | 3.28   | = |
|   | SKS-4d          | 18:02 | 6.18   | = |
|   | Average         |       | 16.04  |   |
|   | SKS-5a          | 09:04 | 4.06   | = |
|   | SKS-5b          | 12:04 | 6.09   | = |
| Spray Cooling Outflow                               | SKS-5c          | 15:04 | 3.55   | = |
|   | SKS-5d          | 18:04 | 3.67   | = |
|   | Average         |       | 4.34   |   |
|   | SKS-6a          | 09:15 | 1.59   | = |
|   | SKS-6b          | 12:15 | 1.31   | = |
| Can Washer Outflow                                  | SKS-6c          | 15:15 | 1.34   | = |
|   | SKS-6d          | 18:15 | 1.41   | = |
|   | Average         |       | 1.41   |   |
|   | SKS-7a          | 09:17 | 1.700  | = |
|   | SKS-7b          | 12:17 | 1.090  | = |
| Boiler Blowdown                                     | SKS-7c          | 15:17 | 1.360  | = |
|   | SKS-7d          | 18:17 | 1.460  | = |
|   | Average         |       | 1.403  |   |
|   | SKS-8a          | 09:06 | 6.100  | = |
|   | SKS-8b          | 12:06 | 5.150  | = |
| Washdown  | SKS-8c          | 15:06 | 8.870  | = |
|   | SKS-8d          | 18:06 | 2.650  | = |
|   | Average         |       | 5.693  |   |
|   | SKS-9a          | 09:20 | 2.400  | = |
|   | SKS-9b          | 12:20 | 1.440  | = |
| Outfall Effluent                                    | SKS-9c          | 15:20 | 1.280  | = |
|   | SKS-9d          | 1820  | 1.910  | = |
|   | Average         | 1020  | 1.758  |   |
| Shaded cells indicate concentrations great than the | -               | 1     | 1.750  |   |
| "=" indicates parameter was detected at the concent |                 |       |        |   |

| Table 4. Zinc   | (total, µg/l) |       |        |   |
|---|---------------|-------|--------|---|
| Waste Stream  | Sample        | Time  | Result |   |
|   | SKS-1a        | 09:08 | 13.8   | = |
|   | SKS-1b        | 12:08 | 10.3   | = |
| Fresh Water Supply  | SKS-1c        | 15:08 | 8.91   | = |
|   | SKS-1d        | 18:08 | 6.36   | = |
|   | Average       |       | 9.84   |   |
|   | SKS-2a        | 09:12 | 19     | = |
|   | SKS-2b        | 12:12 | 39.2   | = |
| Seawater Supply   | SKS-2c        | 15:12 | 8.48   | = |
|   | SKS-2d        | 18:12 | 6.87   | = |
|   | Average       |       | 18.39  |   |
|   | SKS-3a        | 09:00 | 96.6   | = |
|   | SKS-3b        | 12:00 | 159    | = |
| Thaw Water Outflow  | SKS-3c        | 15:00 | 107    | = |
|   | SKS-3d        | 18:00 | 352    | = |
|   | Average       |       | 178.7  |   |
|   |               | 09:02 | 885    | = |
|   |               |       | 1080   | = |
| Butchering Outflow  |               |       | 126    | = |
|   |               |       | 416    | = |
|   | _             |       | 627    |   |
|   |               | 09:04 | 43.5   | = |
|   |               |       | 74.6   | = |
| Spray Cooling Outflow   |               |       | 63.2   | = |
|   |               |       | 44.3   | = |
|   |               |       | 56.4   |   |
|   |               | 09:15 | 5.65   | = |
|   |               |       | 4.8    | = |
| Can Washer Outflow  |               |       | 3.60   | = |
|   |               |       | 5.35   | = |
|   |               |       | 4.85   |   |
|   |               | 09:17 | 40.7   | = |
|   |               |       | 20.2   | = |
| Fresh Water Supply         SKS-1c         15.08         8.91           SKS-1c         15.08         6.91           SKS-1d         18.08         6.33           Average         09.12         19           SKS-2a         09.12         39.2           SKS-2b         15:12         8.46           SKS-2c         15:12         8.46           SKS-2d         18:12         6.63           SKS-2d         18:12         6.63           SKS-3d         09.00         986           SKS-3d         12:00         195           SKS-3d         15:00         100           SKS-3d         15:00         100      SKS-3d         15:02         1080           SKS-4d         15:02         1080           SKS-4d         15:02         1080           SKS-4d         15:02         1080           SKS-5d         15:04         63.2           SKS-6d         15:15         34.0 <t< td=""><td></td><td></td><td>34.3</td><td>=</td></t<> |               |       | 34.3   | = |
|   | 28.8          | =     |        |   |
|   |               |       | 31.0   |   |
|   |               | 09:06 | 644    | = |
|   |               |       | 512    | = |
| Washdown  |               |       | 477    | = |
|   |               |       | 546    | = |
|   | _             |       | 545    |   |
|   |               | 09.20 |        | = |
|   |               |       |        | = |
| Outfall Effluent  |               |       |        | = |
|   |               |       |        | = |
|   | 010000        | 1020  | 11.4   | - |
|   | Average       |       | 81.9   |   |

# **3.4 Effluent Monitoring Results**

The semi-annual effluent toxicity monitoring results for the three metals considered in this report are shown in Table 5.Six monitoring events have been conducted under the current NPDES permit. The samples analyzed were a 24-hour, flow-weighted composites. Mercury and zinc are typically above the ASWQS criterion. Copper is typically below the ASWQS criterion, but the results do indicate a reasonable potential toxceed the criterion when statistically analyzed using the USEPA method for such an analysis. The results are all well below the NPDES permit limitations. It is noted that the limitations were based on effluent concentrations measured during the previous permit cycle. The low concentrations compared to the permit limitations are at least partly attributable topast improvements in plant operations, equipment, and housekeeping practices. A shift to canning loins with a concomitant reduction in whole fish processing may also be a factor.

|           | Table 5. Summary o<br>May 2008 - Se | f Chemistry Resu<br>ptember 2010 JCO E |             | moa            |
|-----------|-------------------------------------|--|-------------|----------------|
| Sample    |                                     |  | Constituent |                |
| Date      | Sampling Season                     | Copper (µg/l)                          | Zinc (µg/l) | Mercury (µg/l) |
| ASI       | NQS Criterion                       | 3.73                                   | 85.62       | 0.050          |
| NPDES Dai | ly Maximum Limitation               | 117.22                                 | 2284        | 4.72           |
| NPDES Mon | thly Average Limitation             | 58.42                                  | 1138        | 1.80           |
| 5/8/2008  | 2008 Non-tradewind                  | 2.86                                   | 263         | 0.159          |
| 9/4/2008  | 2008 Tradewind                      | 3.10                                   | 233         | 0.089          |
| 2/19/2009 | 2009 Non-tradewind                  | 2.00                                   | 153         | 0.135          |
| 9/17/2009 | 2009 Tradewind                      | 1.27                                   | 125         | 0.130          |
| 2/25/2010 | 2010 Non-tradewind                  | 2.01                                   | 114         | 0.103          |
| 9/8/2010  | 2010 Tradewind                      | 2.12                                   | 81.1        | 0.029          |

# 4. Conclusions and Proposed Action

Based on the results of the sampling and analysis described in this report the following conclusions and proposed actions are as follows for each constituent:

# 4.1 Mercury

The source of mercury is clearly from the tuna. There is no practicable way toreduce this source other than maintaining good housekeeping practices that involve clean-up of scrap that is removed during washdown activities. Plant operating staff will be instructed/reminded to sweep and remove obvious scrap material prior towashdown, as is the current practice. The unavoidable and uncontrollable mercury concentrations can be addressed by appropriate NPDES permit limitations and maintaining ampproved mixing zone. As described in previous mixing zone applications, the mixing zone for mercury is very small, extending only few meters from the diffuser and at depths below 150 feet. Water quality standards are achieved within a few seconds after discharge.

## 4.2 Copper

The primary source of copper is clearly from the tuna. Secondary sources from copper plumbing and fittings appear minor. There is no practicable way toreduce this source other than maintaining good housekeeping practices that involve clean-up of scrap that is removed during washdown activities. Plant operating staff will be instructed/reminded tosweep and remove obvious scrap material prior towashdown, as is the current practice. The unavoidable and uncontrollable copper concentrations can be addressed by appropriate NPDES permit limitations and maintaining an approved mixing zone. As described in previous mixing zone applications, the mixing zone for copper is very small, extending only a few meters from the diffuser and at depths below 150 feet. Water quality standards are achieved within a few seconds after discharge, and asindicated in Section 3.4 the water quality standards are generally met at the discharge point.

The source of the apparent sample contamination in the seawater influent flow will be further investigated and documented. A letter report will be provided tdJSEPA and ASEPA with the results of this investigation. The additional sampling and analysis is planned during the normal 2011 effluent toxicity monitoring event.

# 4.2 Zinc

The primary sources of zinc are clearly from the tuna and galvanized fish boxes and other equipment. Galvanized equipment is required in a marine environment to avoid excessive corrosion. There is no practicable way toreduce these sources other than maintaining good housekeeping practices that involve clean-up of scrap that is removed during washdown activities. Plant operating staff will be instructed/reminded toweep and remove obvious scrap material prior towashdown, as is the current practice. The unavoidable and uncontrollable zinc concentrations can be addressed by appropriate NPDES permit limitations and maintaining an approved mixing zone. As described in previous mixing zone applications, the mixing zone for copper is very small, extending only few meters from the diffuser and at depths below 150 feet. Water quality standards are achieved within a few seconds after discharge.

The source of the apparent sample contamination in the seawater influent flow will be further investigated and documented. A letter report will be provided tdJSEPA and ASEPA with the results of this investigation. The additional sampling and analysis planned during the normal 2011 effluent toxicity monitoring event.

# ATTACHMENT 3

# Ocean Dumping Monitoring Plan



engineers | scientists | innovators

# OCEAN DUMPING RECEVING WATER QUALITY MONITORING PLAN

# StarKist Samoa Co., American Samoa

Prepared for

**United States Environmental Protection Agency** 75 Hawthorne Street San Francisco, California, 94105

Prepared by

Geosyntec Consultants, Inc. 130 Stone Road West Guelph, Ontario N1G 3Z5

August 29, 2019

Project Number PH0094U



## **TABLE OF CONTENTS**

| 1 | Intr | oduction                              | .1 |
|---|------|---------------------------------------|----|
|   | 1.1  | Monitoring Plan Organization          | .1 |
| 2 | Per  | mit Monitoring Requirements           | .2 |
| 3 | Sco  | ppe of Work                           | .3 |
|   | 3.1  | Sample Collection Schedule            | .3 |
|   | 3.2  | Sample Locations                      | .3 |
|   | 3.3  | Sampling Methodology                  | .4 |
| 4 | Co   | mmunication                           | .4 |
| 5 | Rep  | porting                               | .4 |
|   | 5.1  | Record Keeping During Sampling Events | .5 |
|   | 5.2  | Sampling Cruise Monthly Reports       | .5 |
|   | 5.3  | Quarterly Reports                     | .6 |
|   | 5.4  | Annual Report                         | .7 |
|   | 5.5  | Final Summary Report                  | .7 |
|   | 5.5  | .1 Notice of Violation                | .7 |
| 6 | Hea  | alth and Safety                       | .7 |
| 7 | Qua  | ality Assurance                       | .8 |
|   | 7.1  | Field Instrumentation                 | .8 |
|   | 7.2  | Field Duplicates                      | .9 |
|   | 7.3  | Decontamination Procedures            | .9 |
| 8 | Ref  | erences                               | 10 |

# LIST OF TABLES

- Table 1: Median Permitted Not to Exceed Values by Parameter
- Table 2: Analytical Sampling Details
- Table 3: Ocean Dumping Log
- Table 4: Ocean Dumping Sampling Log



## LIST OF FIGURES

Figure 1: Dump Site Location

Figure 2: Conceptual Sampling Stations

# LIST OF APPENDICES

Appendix A: Report Forms

# LIST OF ACRONYMS AND ABBREVIATIONS

| ASEPA       | American Samoa Environmental Protection Agency      |
|-------------|---|
| m bws       | meters below the water surface                      |
| MPRSA       | Marine Protection, Research, and Sanctuaries Act    |
| NMFS        | National Marine Fisheries Service                   |
| OD          | ocean dumping                                       |
| THA         | Task Hazard Analysis                                |
| TestAmerica | TestAmerica, Inc.                                   |
| USCG        | U.S. Coast Guard                                    |
| USEPA       | U.S. Environmental Protection Agency                |
| USFWS       | U.S. Fish and Wildlife Service                      |
| WPRFMC      | Western Pacific Regional Fishery Management Council |



#### **1 INTRODUCTION**

Starkist Samoa Co., a wholly owned subsidiary of the StarKist Co. (collectively referred to as (StarKist) is seeking to obtain an Ocean Dumping permit for the ocean disposal of high-strength fish processing wastes from its tuna processing facility in American Samoa (the Facility). StarKist previously obtained a series of ocean dumping permits<sup>1</sup> issued by the Regional Administrator of U.S. Environmental Protection Agency (USEPA) Region 9 for the disposal of fish processing wastes off American Samoa that met USEPA's ocean dumping criteria at 40 C.F.R. Parts 227 and 228.

StarKist has developed this Monitoring Plan to document receiving water quality monitoring activities to be conducted during Ocean Dumping (OD) activities in American Samoa. The data collected under this program will be used to monitor conditions around the OD location (Figure 1). The scope of the monitoring plan was developed based on the previous permit, OD98-01 Special, and the plan was developed to comply with previous permit requirements pursuant to the Marine Protection, Research, and Sanctuaries Act (MPRSA). Although the 1998 Special Permit was never made effective,<sup>2</sup> StarKist understands from recent discussions with USEPA that it would be the basis and framework for a future ocean disposal permit for the StarKist waste streams. This monitoring plan specifically addresses terms and conditions outlined in Special Conditions 5 – Dump Site Monitoring in the 1998 Special Permit.

This receiving water Monitoring Plan does not address Special Condition 3 which includes the analysis of fish processing wastes from the StarKist onshore storage tank and toxicity testing and reporting requirements. The Sampling and Analysis Plans (SAPs) describing procedures for collecting and analyzing fish processing wastes and performing bioassay testing are discussed in separate plans. The Ocean Disposal Bioassay Testing SAP was developed June 24, 2019. The previously developed Wastewater Characterization for Ocean Disposal SAP dated June 14, 2019 does not reflect the use of an onshore storage tank; therefore, a new SAP will be developed and provided to USEPA for review prior to the start of ocean dumping.

#### 1.1 Monitoring Plan Organization

This monitoring plan is organized as follows:

- Section 2 describes monitoring frequency requirements.
- Section 3 describes sample collection, including sampling locations, sampling methodology, and analyses.
- Section 4 summarizes required communication with agencies and other organizations.

<sup>&</sup>lt;sup>1</sup> The previous permits included VCS Samoa Packing under separate permit numbers. However, the former VCS facility, now owned by Samoa Tuna Processors, is not seeking an ocean disposal permit.

<sup>&</sup>lt;sup>2</sup> Letter from Carl L. Goldstein, USEPA, dated March 4, 2002.

- Section 5 presents the reporting schedule.
- Section 6 describes Health and Safety practices to be implemented during monitoring.
- Section 7 summarizes oversight requirements.
- Section 8 describes permit requirements.
- Section 9 describes quality assurance practices which will be observed during monitoring.
- Section 10 presents references used in the development of this monitoring plan.
- Appendix A provides reporting form templates which will be used during monitoring and reporting activities.

# 2 PERMIT MONITORING REQUIREMENTS

The receiving water quality monitoring program for dumping of fish processing wastes in the ocean is intended to document effects of disposed wastes on the receiving waters, biota, and beneficial uses of the receiving waters. The monitoring program is required for compliance with USEPA's Ocean Dumping Regulations and permit terms and conditions.

The permit requires the following:

- Sampling Frequency: OD events may occur multiple times per month, and record-keeping is required for each OD event. Sampling (referred to as a "monitoring cruise") will be completed once per month during active dumping.
- Required Notification: American Samoa Environmental Protection Agency (ASEPA) shall be notified 48 hours before commencing scheduled monitoring activities.
- Summary of Sampling Requirements: During each monitoring cruise, the disposal plume from the disposal vessel shall be sampled by taking discrete water samples for the measurement of parameters listed in Table 1. Control samples and monitoring samples are required from depths of 1, 3, and 10 meters below the water surface (m bws).
- Reporting Requirements: Reports will be routinely submitted to USEPA, ASEPA, National Marine Fisheries (NMFS), U.S. Fish and Wildlife (USFWS), and Western Pacific Regional Fishery Management Council (WPRFMC) documenting the findings of monitoring. Monthly, quarterly, and annual reports will be prepared.



#### **3** SCOPE OF WORK

#### 3.1 Sample Collection Schedule

Receiving water quality sampling will be completed once per month during active dumping. OD events may occur multiple times per month, and record-keeping is required for each OD event.

Sampling will be scheduled during the first two weeks of each month to allow time for lab analysis and reporting. Additionally, because of the time required to ship samples from American Samoa to the laboratory and because of the short hold time of some of the analyses, sampling will be coordinated with flight schedules.

#### 3.2 <u>Sample Locations</u>

During each monitoring cruise, the disposal plume from the disposal vessel shall be sampled by taking discrete water samples. Conceptual Monitoring Stations are depicted in Figure 2; actual monitoring stations will be selected during the disposal event in accordance with the Special Conditions for Dump Site Monitoring where the determination of the disposal location within the dump site are described.

The following discrete samples will be collected:

- <u>Control Samples</u> (i.e., background samples) will be collected from Station 1 prior to beginning dumping. Water samples will be collected from depths of 1, 3, and 10 m bws.
- <u>Monitoring Samples</u> will be collected from five stations in the center of the discharge plume (Figure 2). Station 1 sampled for the control sample prior to dumping at the center of the dump site. The dumping vessel will move 1.1 nautical miles up current from the center of the disposal site. Station 1 will be sampled again from a point within the plume immediately after discharge operations cease. Stations 2, 3, 4, and 5 will be sampled in order, moving in the prevailing surface current direction<sup>3</sup>, after Station 1 is sampled. Station 5 will be the last sample collected. All stations will be sampled at depths of 1, 3, and 10 m bws.
- <u>Sampling Stations</u> are located at the starting position (Control Sample Station 1), 0.25 nautical miles (nmi) down current (Station 2), 0.5 nmi down current (Station 3), 1.0 nmi down current (Station 4), and at the leading edge of the plume, but within the plume (Station 5).

<sup>&</sup>lt;sup>3</sup> The vessel Captain will observe the ocean conditions upon arrival at the center of the dump site, noting the wind direction and observed current direction. These observations will allow the Captain to determine the location within the dump site to begin discharge operations.



#### 3.3 <u>Sampling Methodology</u>

Samples will be collected using a self-closing 3-liter water sampling device (e.g., Van Dorn type sampler) deployed at each depth (1, 3, and 10 m bws). Samples will be decanted into bottleware from the sampling device. Samples and duplicates will be collected and preserved in accordance with Table 2.

Sample containers will be properly preserved, labeled, logged onto a chain-of-custody form, and placed into an iced cooler prior to shipment to the analytical laboratory. Field documentation will be maintained in accordance with details presented in Section 5.1.

The sampling device will be rinsed three times with water obtained at each sampling depth prior to filling. The sampling device and any other reusable equipment will be decontaminated between sampling stations in accordance with Section 9.6.

No investigation derived waste is expected to be generated during sampling. All disposable equipment, including gloves, will be disposed as municipal solid waste.

#### **4 COMMUNICATION**

U.S. Coast Guard Liaison Officer (CGLO) Pago Pago and ASEPA will be notified a minimum of 24 hours before scheduled monitoring activities as follows:

- The waste transporter shall provide telephone notification of sailing to CGLO Pago Pago at 684-633-2299 and the ASEPA at 684-633-2304 during working hours (7:00 a.m. to 3:30 p.m. Samoa Standard Time). The following information will be provided:
  - Planned time of departure;
  - Estimated time of arrival at dump site;
  - Estimated time of departure from dump site; and
  - Estimate time of return to port.
- The waste transporter shall immediately notify CGLO Pago Pago and ASEPA about changes in the estimated time of departure greater than two hours.

### 5 **REPORTING**

Records will be kept during all discharge events and during all monitoring events.

# Geosyntec<sup>▷</sup>

#### 5.1 <u>Record Keeping During Sampling Events</u>

In addition to the requirements listed in Section 5.1, the following shall be recorded during all sampling events. These details will be recorded on Table 4 and additionally reported in the navigational plot created after the disposal event.

- Sampling Details:
  - Time each sample is collected
  - Sampling locations at each station and method of determination
  - Observations of plume color (e.g., Forel-Ule color scale <u>http://forel-ule-scale.com</u>), odor, floating materials, oil & grease, scum, and foam
  - Temperature measurements and pH at each sample depth
- All sightings of fish, sea turtles, sea birds, cetaceans
  - Time, location, bearing
  - Species name
  - Approximate number of individuals.

#### 5.2 Sampling Cruise Monthly Reports

Monthly receiving water quality monitoring reports shall be submitted to USEPA Region 9, ASEPA, NMFS, USFWS, and WPRFMC with the 3-month reports as specified in Section 5.4.

The reports shall include:

- Cover Page:
  - Monitoring vessel
  - Discharge vessel
  - Chief investigator
  - Number of trips
  - Gallons for the month
  - Running time on trips
  - Discharge time on trips



- Average gallons per minute (GPM) discharge rate
- Average trip time
- A compilation of all Table 3's created during ocean dumping activities
- Table 4 created during sampling
- The navigational plot created to record sampling activities
- Report Form 1 (Appendix A), which records total volume generated (gal/day), volume ocean disposed (gal/day), and monthly volumes of alum (aluminum sulfate) and coagulant polymer added to fish processing waste streams.

#### 5.3 **Quarterly Reports**

Quarterly reports shall be submitted to USEPA Region 9, ASEPA, NMFS, USFWS, and WPRFMC within 45 days of the end of the preceding 3-month period for which they were prepared.<sup>4</sup>

Quarterly reports shall include:

- Cover page with list of attachments
- A compilation of disposal event records
- The monthly Sampling Cruise Monitoring Reports
- The navigational plots created during disposal and sampling activities
- Results of Monthly Monitoring Analyses.
- A comparison with the permit limits as required on Report Form 1 (Appendix A).
  - Report Form 1 (Appendix A) which records daily volume of fish processing waste (total combined waste streams of DAF Sludge, Pre-Cooker, and Fishmeal Sump) generated at the StarKist facility and pumped into the onshore storage tanks; and the daily volume of fish processing waste disposed at the ocean disposal site.
- Report Form 2 (Appendix A), which records the monthly amount of alum (aluminum sulfate) and coagulant polymer added to the fish processing waste streams.

<sup>&</sup>lt;sup>4</sup> The reports shall be submitted within this time unless extenuating circumstances are communicated to USEPA Region 9 and the ASEPA in writing.



- Letter to ASEPA reporting exceedances and irregularities during the 3-month period.
- List of cc'd individuals

#### 5.4 <u>Annual Report</u>

Annual reports shall be submitted within 45 days of the end of the last quarterly report for that year to USEPA Region 9, the ASEPA, NMFS, USFWS, and WPRFMC.

- Annual compilation of data
- Statistical analysis of sample variability between stations and within samples for each parameter
- Detailed discussion of results
- Summary table of Monthly Report Form 1 (Appendix A) data.

#### 5.5 Final Summary Report

A Final Summary Report shall be submitted to USEPA Region 9, ASEPA, NMFS, USFWS, and WPRFMC 60 days after permit expires. The purpose of the Final Summary Report is to summarize all data collected to characterize fish processing wastes and results of the dump site monitoring program, including a comparison with permit limits and a detailed discussion of the summary results.

#### 5.5.1 Notice of Violation

Upon detection of a violation of any permit condition, the permittee shall send a written notification of this violation to USEPA Region 9 and the ASEPA within five working days and a detailed written report of the violation shall be sent to the agencies within 15 working days. This notification shall pertain to any permit limits (Table 1) that are exceeded, violation of volume limits (transport and dispose a combined waste stream total maximum of 200,000 gallons per day of fish processing wastes), and any disposal operation that occurs outside the disposal site.

### 6 HEALTH AND SAFETY

Prior to mobilization for the first monitoring cruise, a task hazard analysis (THA) will be created to prepare the sampling team for hazards they may encounter during sampling.

The THA will include emergency contact information, a summary of the work process and associated hazards and mitigators, and a list of required personal protective equipment. The THA will be updated, as necessary, and be available to the sampling team during sampling activities.

### 7 QUALITY ASSURANCE

Qualifications of the on-site Principal Investigator in charge of the field monitoring program at the dump site will be submitted to USEPA Region 9 and ASEPA for approval whenever a new Principal Investigator is retained. The Principal Investigator will have experience in coordinating and leading water quality studies, collection of deep-water samples, and operation and maintenance of field sampling equipment.

Notification of any change in this individual will be submitted to USEPA Region 9 and ASEPA at least 7 days before the planned dumping is scheduled.

#### 7.1 <u>Field Instrumentation</u>

Field equipment needed for sampling will be properly maintained and calibrated prior to and during continued use to assure that measurements are as accurate as possible. Personnel will follow manufacturers' instructions to evaluate whether instruments are functioning within their established operational ranges. Calibration data will be recorded in the field logbook or on field data sheets.

Other requirements relating to calibration are as follows.

- To be acceptable, a field test must be bracketed between acceptable calibration results.
- The first check of the day may be an initial calibration, but the second check must be a continuing verification check.
- Each field instrument must be calibrated prior to use at no more than 24-hour intervals.
- The calibration must be verified at no more than 24-hour intervals during use and at the end of use if the instrument will not be used the next day or within a time period greater than 24 hours.
- Initial calibration and verification checks must meet the acceptance criteria are as follows:
  - Temperature: +/-0.2 °C against an NIST-traceable thermometer
  - pH: +/-0.2 pH units of stated buffer value
  - Dissolved Oxygen: +/-0.3 mg/L
  - Turbidity: Manufacturer specified
- If an initial calibration or verification check fails to meet the acceptance criteria, the instrument should be immediately recalibrated or removed from service.

# Geosyntec consultants

- If a calibration check fails to meet the acceptance criteria and it is not possible to reanalyze the samples, the following actions should be taken:
  - Results collected between the last acceptable calibration check and the failed calibration check should be reported as estimated (qualified with a "J");
  - A narrative of the problem should be included; and
  - The time period between verification checks should be shortened, or the instrument should be repaired or replaced.
- If historically generated data demonstrate that a specific instrument remains stable for extended periods of time, the interval between initial calibration and calibration checks may be increased.
  - Acceptable field data should be bracketed by acceptable checks. Data that are not bracketed by acceptable checks must be qualified.
  - The time interval should be selected based on the shortest interval that the instrument maintains stability.
  - If an extended time interval is used and the instrument consistently fails to meet the final calibration check, then the instrument may require maintenance to repair the problem or the time period between calibrations must be shortened.
- For continuous monitoring equipment, field data should be bracketed by acceptable checks or the data must be qualified.

### 7.2 <u>Field Duplicates</u>

Field duplicates are two samples (an original and a duplicate) of the same matrix, to the extent practicable, collected at the same time and location and using the same sampling techniques. Field duplicate samples are used to evaluate the precision of the overall sample collection and analysis process. Field duplicates will be collected as indicated in Table 2 and analyzed for the same set of analytes as for the regular sample collected. Exact locations of duplicate samples and sample identifications will be recorded in the field logbook or on field forms.

### 7.3 <u>Decontamination Procedures</u>

Reusable equipment will be decontaminated between sample stations. Equipment will be washed with phosphorous-free detergent (e.g., Liquinox<sup>®</sup>) and rinsed with tap water.



# 8 **REFERENCES**

CH2M Hill. 1997. Revised Report for Joint Cannery Ocean Dumping Studies in American Samoa.

#### Table 1 - Median Permitted Not to Exceed Values by Parameter

| Parameter         | Meadian Not to Exceed the Given Value in Oceanic Waters   |
|-------------------|---|
| Turbidity         | 0.2 NTU   |
| Total Phosphorus  | 11.0 µg-P/L   |
| Total Ntirogen    | 115 µg-N/L  |
| Chlorophyll a     | 0.18 µg/L   |
| Light Penetration |   |
| Depth             | 150 feet  |
|                   | Not less than 80% of saturation or less than 5.5 mg/L.    |
|                   | If the natural level of dissolved oxygen is less than 5.5 |
|                   | mg/L, then the natural dissolved oxygen level shall       |
| Dissolved Oxygen  | become the standard.                                      |
|                   | The pH range shall be 6.5 to 8.6 pH units and within      |
| pН                | 0.2 pH units of the level which occurs naturally.         |

Notes

1. Values in this table are from §24.0206(p) Standards of Water Quality - Ocean Waters from 2013 Revision American Samoa Water Quality Standards, Administrative Rule No. 001-2013.

|          | Analyte(s)  | EPA Method                             | Volume<br>Required<br>(mL) | Container   | Preservation  | Hold Time            | Duplicate<br>Collection<br>Frequency | Required<br>Method<br>Detection Limit<br>(mg/L) | Expected Method<br>Detection Limit<br>(mg/L)         |
|----------|---|--|----------------------------|---|---|----------------------|--------------------------------------|---|--|
|          | Total Suspended Solids  | Standard Method 2540D/EPA Method 160.2 | 1000                       | Plastic 1 liter -<br>unpreserved  | Cool to ≤6°C  | 7 days               | 1/20                                 | 10  | 10   |
|          | Total Volatile Suspended Solids   | EPA 160.4                              | 1000                       | Plastic 1 liter -<br>unpreserved  | Cool to ≤6°C  | 7 days               | 1/20                                 | 10  | 10   |
|          | Oil and Grease  | EPA 1664                               | 1000                       | Glass 1 liter - unpreserved   | Cool to <6°C<br>Preserve with<br>H2SO4 to pH < 2  | 28 days              | 1/20                                 | 10  | 5  |
|          | Total Phosphorus  | EPA 365.4                              | 250                        | Plastic 250ml - with<br>Sulfuric Acid ( <b>same bottle</b><br><b>as TKN</b> ) | Cool to <6°C<br>Preserve with<br>H2SO4 to pH < 2  | 28 days              | 1/10                                 | 1   | 0.05   |
| Nitrogen | TKN<br>No2+No3  | EPA 351.2: TKN                         | 250                        | Plastic 250ml - with<br>Sulfuric Acid ( <b>same bottle</b><br><b>as TP</b> )  | Cool to $\leq 6^{\circ}$ C<br>Preserve with<br>H <sub>2</sub> SO <sub>4</sub> to pH < 2 | 28 days              | 1/10                                 | 1   | 0.2  |
| Total    | No2+No3   | EPA 353.2/SM4500-NO-3-F                | 250                        | Plastic 250ml -<br>unpreserved  | Cool to $\leq 6^{\circ}$ C<br>Preserve with<br>H <sub>2</sub> SO <sub>4</sub> to pH < 2 | 28 days              | 1/10                                 | 1   | 0.1  |
|          | Ammonia   | EPA 350.1                              | 250                        | Plastic 250ml - with<br>Sulfuric Acid   | Cool to $\leq 6^{\circ}$ C<br>Preserve with<br>H <sub>2</sub> SO <sub>4</sub> to pH < 2 | 28 days              | 1/10                                 | 1   | 0.1  |
|          | Chlorophyll a   | SM 10200H (Field Filtered)             | 100                        | plastic or glass container  | Frozen, Dark  | 28 days (dark)       | 1/10                                 | Not stated                                      | 0.02   |
|          | field parameters (Temperature,<br>tubidity, pH, light penetration<br>depth, DO) | Field Water Quality Meter, secchi disk | N/A                        | N/A   | N/A   | Measured immediately | N/A                                  | pH: 0.1 units                                   | pH: 0.1 units<br>turbidity: 0.01 NTU<br>DO: 0.1 mg/L |

Notes:

1. Hold times are listed from time of sample collection.

2. Field water quality meter shall be YSI 6-Series/EXO Sonde or equivalent. YSI Sonde User Manual found at <u>https://www.ysi.com/File%20Library/Documents/Manuals/069300-YSI-6-Series-Manual-RevJ.pdf</u>

3. QA/QC to comply with protocols and references in Special Condition 3.1.2  $\,$ .

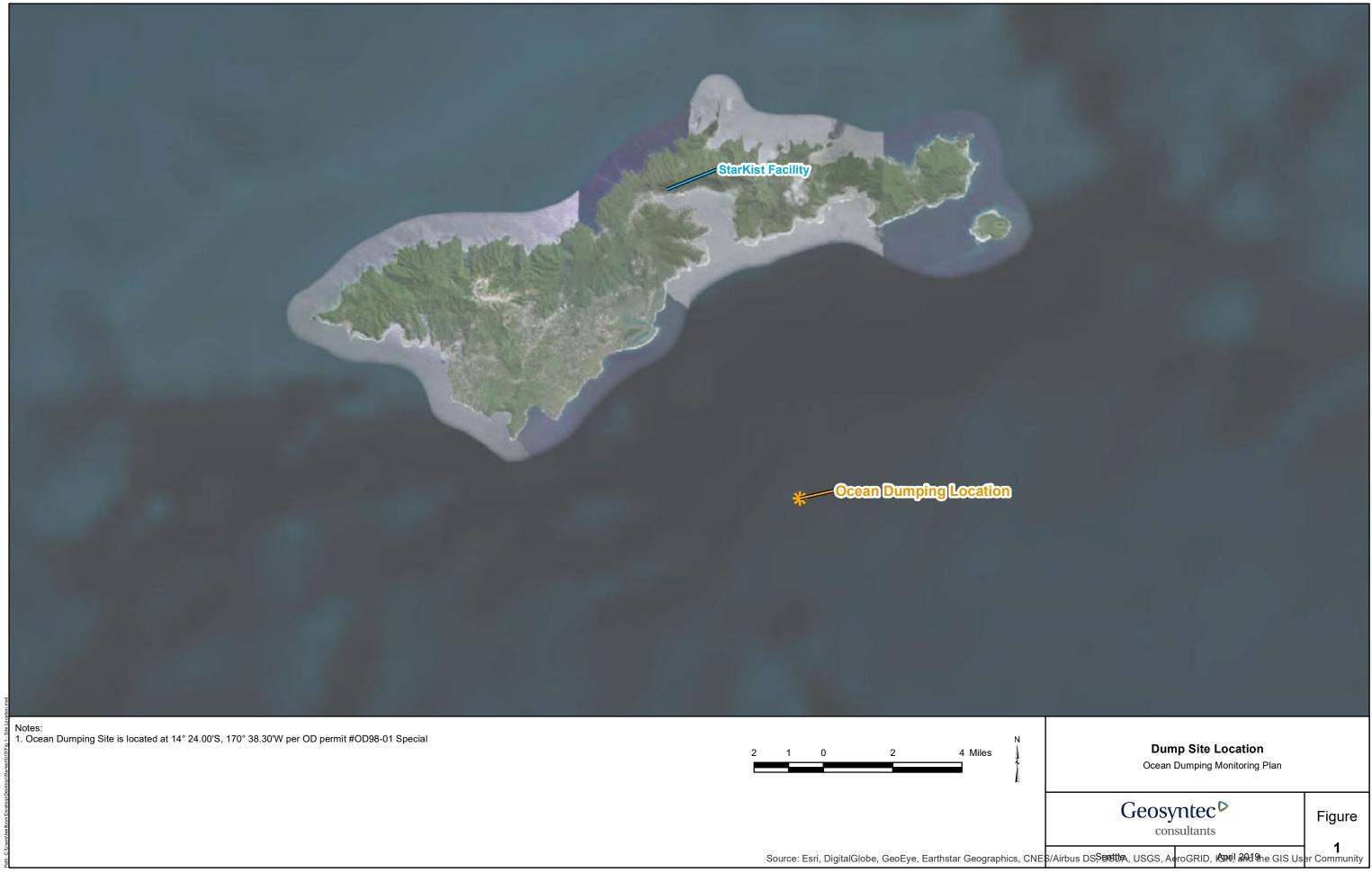
4. The required MDL is listed in Table 4 of Section 7.2.4 of GDC 16696 - Special Conditions of Monitoring Dump Site (1998).

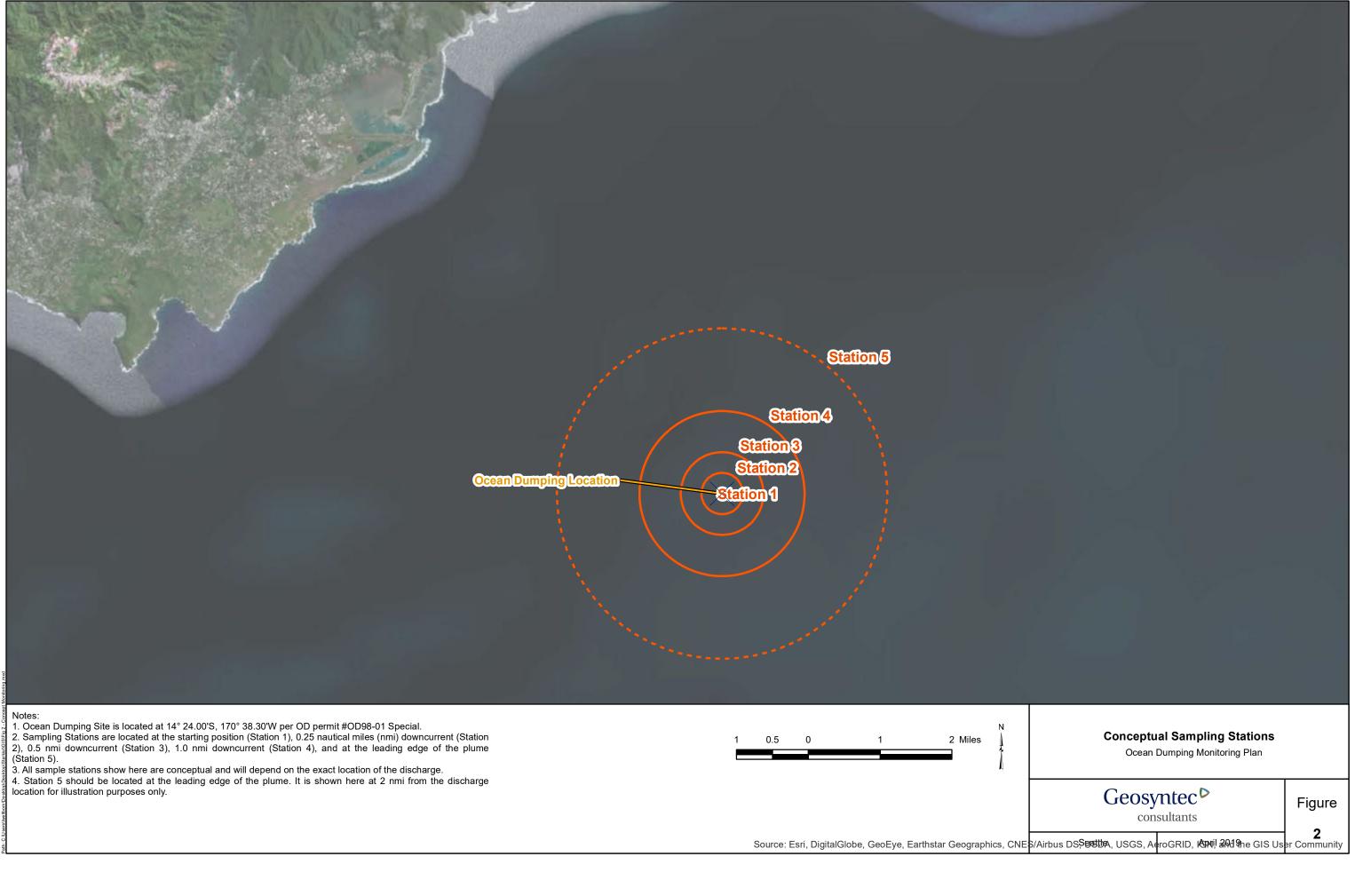
Table 3 - Ocean Dumping Log

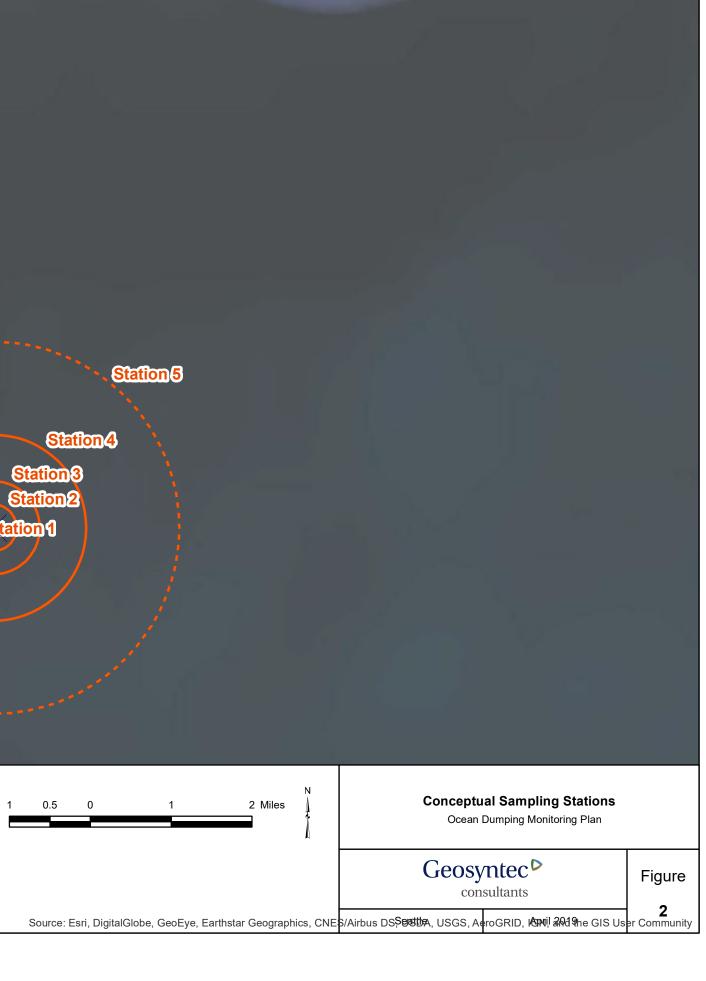
**Permit #: ###** 

| Date:                                    |                                      |             | Voyage #:          |                    | Volume Loaded    | :                 |               |
|--|--------------------------------------|-------------|--------------------|--------------------|------------------|-------------------|---------------|
| Vessel:                                  |                                      | - v         | Wave height        |                    | SK               |                   | Gallons       |
|  | Begin Loading SK                     |             | Visibility         |                    | Other            |                   | Gallons       |
|  | Finish Loading SK                    |             |                    |                    | Total            |                   | Gallons       |
| Notifications mad                        | le: ASEPA                            | _GCLO _     |                    |                    |                  |                   |               |
| Time (every 15<br>min during<br>dumping) | Task Performing                      |             | Position<br>(Long) | Wind Speed         | Wind Direction   | Speed (kts)       | Course (True) |
|  | Departure                            |             |                    |                    |                  |                   |               |
|  | Arrival at dump site                 |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  |                                      |             |                    |                    |                  |                   |               |
|  | Finish Discharge                     |             |                    |                    |                  |                   |               |
|  | Depart dump site                     |             |                    |                    |                  |                   |               |
|  | Return to port/Secure SK Dock        |             |                    |                    |                  |                   |               |
|  | : At Beginning of discharge          |             |                    |                    |                  | Discharge Pattern |               |
| -  | Fime:mins                            | -           |                    | Discharge:         | kts. Dis         | scharge direction | :             |
| Discharge Rate:                          |                                      | Gallons/m   |                    |                    |                  | Total Time Run    | :             |
| -  | n of any floating material (incl gre |             |                    |                    |                  |                   |               |
| Precense of previ                        | ous disposal plume and unusual of    | ccurrences: |                    |                    |                  |                   |               |
| Deviation from n                         | ormal disposal pattern:              |             |                    | son for deviation: |                  |                   |               |
| MASTER OF V                              | ESSEL TO SIGN: Disposal Ope          | rations occ | urred in the       | manner require     | d by the permit: |                   |               |

| <u>Date</u><br>Vessel |                           |                   | Direction/Speed):<br>Current Direction: |           | _Sampling    | Personnel:<br>ave Height: | :                         |         |                      |                 |           |       |
|-----------------------|---------------------------|-------------------|---|-----------|--------------|---------------------------|---------------------------|---------|----------------------|-----------------|-----------|-------|
| Time                  | Station                   | Depth<br>(meters) | Latitude                                | Longitude | Temp<br>(°C) | pH                        | Secchi<br>Disk<br>Reading | Odor    | Floating<br>Material | Oil &<br>Grease | Scum/Foam | Color |
|                       |                           | 1                 |   |           |              |                           |                           |         |                      |                 |           |       |
|                       | Control                   | 3                 |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           | 10                |   |           |              |                           |                           |         |                      |                 |           |       |
|                       | Station 1                 | 3                 |   |           |              |                           |                           |         |                      |                 |           |       |
|                       | Station 1                 | 10                |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           | 1                 |   |           |              |                           |                           |         |                      |                 |           |       |
|                       | Station 2                 | 3                 |   |           |              |                           | 1 1                       |         |                      |                 |           |       |
|                       |                           | 10                |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           | 1                 |   |           |              |                           |                           |         |                      |                 |           |       |
|                       | Station 3                 | 3                 |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           | 10                |   |           |              |                           |                           |         |                      |                 |           |       |
|                       | Ge et                     | 1                 |   |           |              |                           | 4 -                       |         |                      |                 |           |       |
|                       | Station 4                 | 3<br>10           |   |           |              |                           |                           | 4       |                      |                 |           |       |
|                       |                           | 10                |   |           |              |                           | + +                       |         |                      |                 | <b></b>   |       |
|                       | Station 5                 | 3                 |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           | 10                |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   | I.        |              |                           |                           |         |                      |                 |           |       |
|                       | of fish, sea turtles, sea | birds, cetae      |   |           |              |                           |                           |         | 1                    |                 |           |       |
| Time                  | Species                   |                   | Lo                                      | cation    | Веа          | aring                     | # of indi                 | viduals |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         | l                    |                 |           |       |
|                       |                           |                   |   | C         |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   | 4         |              |                           |                           |         |                      |                 |           |       |
|                       |                           |                   |   |           |              |                           |                           |         |                      |                 |           |       |







# APPENDIX A Report Forms

#### **APPENDIX A - REPORT FORM 1**

Monthly Volumes of Starkist Samoa Co. Fish Processing Wastes Generated Per Day and Volume of Fish Processing Wastes Disposed at the Ocean Site

|               |  | Month:                                     |  |                                  |
|---------------|--|--|--|----------------------------------|
| OD 93-01      | DAF Sludge<br>Generated<br>(gallons/day) | Cooker Water<br>Generated<br>(gallons/day) | Press Liquor<br>Generated<br>(gallons/day) | Total Generated<br>(gallons/day) |
| Permit Limits | TBD                                      | TBD  | TBD  | TBD                              |

| Date           | DAF Sludge<br>Generated<br>(gallons/day) | Cooker Water<br>Generated<br>(gallons/day) | Press Liquor<br>Generated<br>(gallons/day) | Total Generated<br>(gallons/day) | Volume Ocean<br>Disposed<br>(gallons/day) |
|----------------|--|--|--|----------------------------------|---|
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  | · ·  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                | -  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
|                |  |  |  |                                  |   |
| Monthly Totals | 0  | 0  | 0  | 0                                | 0   |

Note:

TBD - Permit Limits will be populated upon issuance of the permit

An asterick (\*) to the right of the fish processign waste volume signifies that a violation of the permit limit has occurred.

The number of violations are shown in monthly totals row.

Monthly quantities of alum (aluminum sulfate) and coagulant polymer added to the fish processing waste streams:

Aluminum sulfate:Pounds/MonthCoagulant polymer:Pounds/Month

#### APPENDIX A - REPORT FORM 2 Cumulative Yearly Data on Fish Processing Wastes Generated at Starkist Samoa Co and Disposed at the Ocean Site MPRSA 102 Special Permit **#OD**

| <b>Reporting Period:</b>    | From                                       |  | То  |                                    |                                    |                                     |   |
|-----------------------------|--|--|---|------------------------------------|------------------------------------|-------------------------------------|---|
| Month & Year                | DAF Sludge<br>Generated<br>(gallons/month) | Cooker Water<br>Generated<br>(gallons/month) | Press Water<br>Generated<br>(gallons/month) | Total Generated<br>(gallons/month) | Aluminum sulfate<br>(pounds/month) | Coagulate Polymer<br>(pounds/month) | Volume Ocean<br>Disposed<br>(gallons/month) |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   | Ť                                  |                                    |                                     |   |
|                             |  |  |   | *                                  |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
|                             |  |  |   |                                    |                                    |                                     |   |
| Cumulative Yearly<br>Totals | 0  | 0  | 0   | 0                                  | 0                                  | 0                                   | 0   |

Note:

A separate table shall be prepared for each calendar year.

StarKist Samoa CO Ocean Dump Site Monitoring Reports - Analytical Results

|   |   | TSS         | TVSS         | ТР         | TN         | <b>0&amp;</b> G | Ammonia         |
|---|---|-------------|--------------|------------|------------|-----------------|-----------------|
| Date  | Depth (m)   | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
|   | • • • •   | SKS         | sks          | SKS        | SKS        | SKS             | SKS             |
| Station 1   | control - 1   |             |              |            |            |                 |                 |
|   | control - 3   |             |              |            |            |                 |                 |
|   | control - 0   |             |              |            |            |                 |                 |
| Station 1   | 1   |             |              |            |            |                 |                 |
|   | 3   |             |              |            |            |                 |                 |
|   | 10  |             |              |            |            |                 |                 |
| Station 2   | 1   |             |              |            |            |                 |                 |
|   | 3   |             |              |            |            |                 |                 |
|   | 10  |             |              |            |            |                 |                 |
| Station 3   | 1   |             |              |            |            |                 |                 |
|   | 3   |             |              |            |            |                 |                 |
|   | 10  |             |              |            |            |                 |                 |
| Station 4   | 1   |             |              |            |            |                 |                 |
|   | 3   |             |              |            |            |                 |                 |
|   | 10  |             |              |            |            |                 |                 |
| Station 5   | 1   |             |              |            |            |                 |                 |
|   | 3   |             |              |            |            |                 |                 |
|   | 10  |             |              |            |            |                 |                 |
|   |   |             |              |            |            |                 |                 |
|   |   |             |              |            |            |                 |                 |
|   |   | TSS         | TVSS         | ТР         | TN         | O&G             | Ammonia         |
| Date  | Depth (m)   | TSS<br>mg/L | TVSS<br>mg/l | TP<br>mg/l | TN<br>mg/l | O&G<br>mg/l     | Ammonia<br>mg/l |
| Date  | Depth (m)   |             |              |            |            |                 |                 |
| Date<br>Station 1   | control - 1   | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
|   | control - 1<br>control - 3  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1   | control - 1   | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
|   | control - 1<br>control - 3<br>control - 0<br>1  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1   | $\begin{array}{c} control - 1 \\ control - 3 \\ control - 0 \\ \hline 1 \\ 3 \end{array}$   | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1  | control - 1           control - 3           control - 0           1           3           10  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1  | control - 1           control - 3           control - 0           1           3           10           1  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1  | $\begin{array}{r} control - 1\\ control - 3\\ control - 0\\ \hline 1\\ 3\\ \hline 10\\ \hline 1\\ 3\\ \end{array}$  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2                           | control - 1           control - 3           control - 0           1           3           10           1           3           10           1           3           10           1           3           10   | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1   | control - 1           control - 3           control - 0           1           3           10           1           3           10           1           3           10           1           1           3  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2                           | control - 1           control - 3           control - 0           1           3           10           1           3           10           1           3           10           3           10           3           10           3           3  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2<br>Station 3              | control - 1           control - 3           control - 0           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10                                      | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2                           | control - 1           control - 3           control - 0           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1                          | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2<br>Station 3              | control - 1         control - 0         1       3         10       1         3       10         1       3         10       1         3       10         1       3         10       1         3       3         10       1         3       3         10       1         3       3  | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2<br>Station 3<br>Station 4 | control - 1           control - 3           control - 0           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10           1           3           10 | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2<br>Station 3              | control - 1         control - 3         control - 0         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1            | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2<br>Station 3<br>Station 4 | control - 1         control - 3         control - 0         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         3            | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |
| Station 1<br>Station 1<br>Station 2<br>Station 3<br>Station 4 | control - 1         control - 3         control - 0         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1         3         10         1            | mg/L        | mg/l         | mg/l       | mg/l       | mg/l            | mg/l            |

TSS is reported as non-filterable residue

TVSS is reported as volatile non-filterable residue