

# REPORT COVER PAGE

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**Report Title:** Region 9 Enforcement and Compliance Assurance Division Inspection Report

Compliance Evaluation Inspection on August 17 2023 and August 18 2023

Focused Compliance Inspection on January 16 2024

**Date of Report:** April 30 2024

**Agency:** US Environmental Protection Agency

**Division:** Enforcement and Compliance Assurance

**Branch:** Air, Waste and Chemicals

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**Facility Address:** 3250 Scott Blvd Santa Clara, California, 95054

Tenant and Operator: Apple Inc (“Aria”)

Owner: Cushman & Wakefield

FRS ID: 110001168254

RCRA LQG ID: CAR000278176 (prior CAT000623983)

TRI ID: 95051NTRSL3250S

SIC: TRIS 3674 Semiconductors and Related Devices

Bay Area Air Quality Management District Permit No. 22839 (“Semiconductor fab”).

San Jose-Santa Clara Regional Wastewater Facility Permit No. SC-461B (“Semiconductor – New Source”).

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**Property APN:** 216-29-117

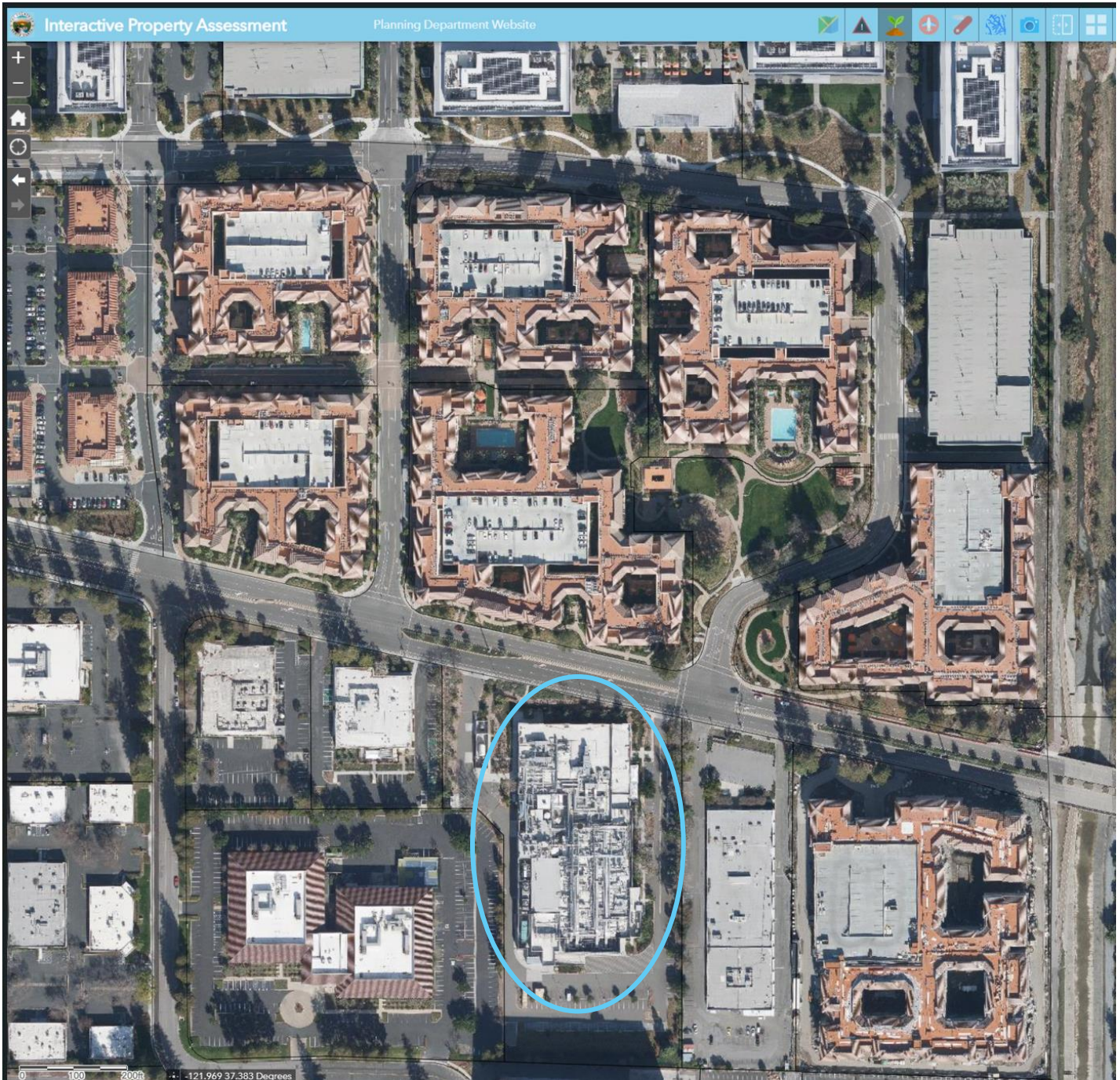
**Zoning:** Light Industrial (with existing Planned Development for 1,800 residential units on the northern property line, and Light Industrial on the western, southern, and eastern property lines). There is a pending 4/2024 Planning application requesting to add 166 new residential units on the eastern property line.

**General Plan Phase III:** Low Intensity Office / R&D (with High Density Residential on the northern, western, and southern property lines; and Low Intensity Office / R&D on the eastern property line).

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Notes: The US EPA report was released per FOIA Request (No. 2024-EPA-04320) on June 21 2024. This “report cover page” summary was written by Ashley Gjovik (not US EPA).

# COVER PAGE CONT.



*3250 Scott Blvd and surrounding buildings.*

## COVER PAGE CONT.

Documents provided by the US EPA in response to FOIA Request No. 2024-EPA-04320:

Redacted - Apple CEI Final Dated 043024.pdf

Attachment A - Apple Photograph Log - Redacted.pdf

Attachment B - SB01 Air Permit 22839.pdf

Attachment C - SB01 Industrial Wastewater Permit.pdf

Attachment D - Tiered Permitting Unit - Awn System.pdf

Attachment E - Tiered Permitting Unit - HMR System.pdf

Attachment F - Tiered Permitting Unit - Solvent Tank System.pdf

Attachment G - SB01 Water with Solvents Profile.pdf

Attachment H - Permit Modification Application\_Plant 22839\_13Sep23 Signed.pdf

Attachment L - IPA SDS.pdf

Attachment R - Improperly Characterized Activated Carbon Shipments.pdf

Redacted Attachment I - SDS.pdf

Redacted Attachment J - SDS.pdf

Redacted Attachment K - SDS.pdf

Redacted Attachment M - SDS.pdf

Redacted Attachment N - SDS.pdf

Redacted Attachment O - SDS.pdf

Redacted Attachment P - SDS.pdf

Redacted Attachment Q - CH1505500 Mixed Flam liquid SB01.pdf

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**COPY OF US EPA FOIA REQUEST NO. 2024-EPA-04320**

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## REGION 9

SAN FRANCISCO, CA 94105

Ashley Gjovik  
ashleymgjovik@protonmail.com

Re: Freedom of Information Act Request No. 2024-EPA-04320

Final Response

Dear Ashley Gjovik:

This letter concerns the above-referenced Freedom of Information Act (FOIA) request, received by the U.S. Environmental Protection Agency (EPA) on May 21, 2024, in which you requested the recent inspection report for RCRA compliance at 3250 Scott Blvd., in Santa Clara, California.

### Final Response

EPA has now concluded its search for records responsive to your FOIA request. A portion of the record is available through the EPA FOIAXpress Public Access Link (PAL) at <https://foiublicaccessportal.epa.gov/>.

To access the records, please go to the *Sign In* link in the upper right-hand corner of the PAL and log in to your FOIAXpress account, if you have one. If you are not a FOIAXpress user and want to create an account, please contact FOIA\_HQ@epa.gov to request an account invitation email.

The records are also available in EPA's virtual public Reading Room. To access the records, select the *Reading Room* link at the top of the PAL. Enter "\*04320" for the FOIA Case Number, click on *Search*, and locate the records associated with FOIA Request No. 2024-EPA-04320.

EPA is withholding information under Exemption 4 of the FOIA, 5 U.S.C. § 552(b)(4). EPA has determined that the withheld material may contain Confidential Business Information, which is exempt from disclosure under Exemption 4. Pursuant to 40 C.F.R. § 2.204(d)(1), your request is being initially denied, with respect to these portions of the records, because further inquiry by EPA is required before a final determination can be made.

For those records that have been partially redacted, EPA has identified the basis for the redaction directly on the released record. EPA has considered the foreseeable harm standard when reviewing records and applying FOIA exemptions.

With respect to our withholdings under Exemption 4, please advise EPA if you believe EPA should conduct a final confidentiality determination. We will contact you to confirm your continued interest in receiving a final confidentiality determination. If appropriate, we will also provide you with a fee estimate and request an assurance of payment. Once we have confirmed your continued interest in the information and received any necessary assurance of payment, we will consult with all relevant third parties in connection with the information that has been withheld. The Office of Regional Counsel in EPA Region 9 will then issue a final confidentiality determination on whether the material qualifies for confidential treatment or may be released.

If EPA is assessing fees related to the processing of your FOIA request, an invoice with billing and payment instructions will be sent to you in separate correspondence.

#### Final Appeal Rights and Contact Information

This letter concludes our response to your request. As noted above, we have not yet made a final determination on the releasability of the material we have withheld under Exemption 4. We will be in contact with you regarding our review of this information. Therefore, you do not need to appeal the withholding of information under Exemption 4.

To the extent you would like to appeal any other issue, you may appeal this determination in writing within ninety (90) calendar days from the date of this letter by one of the following methods:

- 1.) Visit EPA's FOIA submission website (<https://foiapublicaccessportal.epa.gov/>), sign into your account by clicking *Sign In*, and select *Submit Appeal*;
- 2.) U.S. Mail sent to the following address: National FOIA Office, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW (2310A), Washington, DC 20460; or
- 3.) Overnight delivery service to National FOIA Office, U.S. Environmental Protection Agency, 1200 Pennsylvania NW, Room 7309C, Washington, DC 20460.

The Agency will not consider appeals received after the 90-calendar-day limit. Appeals received after 5:00 p.m. EST will be considered received on the next business day. The appeal should include the FOIA tracking number listed above. For quickest possible handling, the appeal letter, and its envelope, if applicable, should be marked "Freedom of Information Act Appeal."

If you need any further assistance or would like to discuss any aspect of your request, you may seek assistance from EPA's FOIA Public Liaison at [hq.foia@epa.gov](mailto:hq.foia@epa.gov) or call (202) 566-1667. You may also seek assistance from the Office of Government Information Services (OGIS). You may contact OGIS in any of the following ways: by mail, Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road, College Park, MD 20740-6001; email: [ogis@nara.gov](mailto:ogis@nara.gov); telephone: (202) 741-5770 or (877) 684-6448; or fax: (202) 741-5769. For all media inquiries, please contact [press@epa.gov](mailto:press@epa.gov).

Please contact J. Andrew Helmlinger at [helmlinger.andrew@epa.gov](mailto:helmlinger.andrew@epa.gov) or (415) 972-3904 should you have any questions concerning this matter.

Sincerely,

Amy C. Miller-Bowen, Director  
Enforcement and Compliance Assurance Division

**OFFICIAL US EPA RCRA REPORT**  
**FOR 3250 SCOTT BLVD, SANTA CLARA**

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**Report Title:** Region 9 Enforcement and Compliance Assurance Division Inspection Report

Compliance Evaluation Inspection on August 17 2023 and August 18 2023

Focused Compliance Inspection on January 16 2024

**Date of Report:** April 30 2024

**Agency:** US Environmental Protection Agency

**Division:** Enforcement and Compliance Assurance

**Branch:** Air, Waste and Chemicals

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**Region 9 Enforcement and Compliance Assurance Division  
 INSPECTION REPORT**

<b>Inspection Date(s):</b>	August 17 – 18, 2023 and January 16, 2024	<b>Inspection(s) Announced:</b> No	
<b>Time #1:</b>	<b>Entry #1:</b> 10:05 am (August 17, 2023)	<b>Exit #1:</b> 2:29 pm (August 18, 2023)	
<b>Time #2:</b>	<b>Entry #2:</b> 9:20 am (January 16, 2024)	<b>Exit #2:</b> 4:50 pm (January 16, 2024)	
<b>Media:</b>	RCRA		
<b>Regulatory Program(s)</b>	RCRA Subtitle C: Hazardous Waste Program;		
<b>Company Name:</b>	Apple, Inc.		
<b>Facility or Site Name:</b>	Same		
<b>Facility Location(s): (city, state, zip code)</b>	3250 Scott Blvd, Santa Clara, CA 95054		
<b>Mailing Address: (city, state, zip code)</b>	1 Apple Park Way, M/S 319 EHS Cupertino, CA 95014		
<b>Geographic Coordinates:</b>	37.378670 / -121.971840 [ <a href="http://www.latlong.net">www.latlong.net</a> ]		
<b>County:</b>	Santa Clara County		
<b>Facility/Site Contact:</b>	Tom Huynh	EHS Manager	
	<a href="mailto:tom.huynh@apple.com">tom.huynh@apple.com</a>		
	(408) 595-0947		
<b>Facility/Site Identifier:</b>	EPA ID Number: CAR 000 278 176 and CAT 000 623 983		
<b>Generator Status:</b>	<p>EPA inspected one Apple, Inc. (Apple) facility located at 3250 Scott Blvd in Santa Clara, CA (EPA ID Number CAR 000 278 176). This facility operates as Large Quantity Generator (LQG) of RCRA and non-RCRA hazardous waste (NRHW) in the State of California. This facility also operates as a Small Quantity Handler of Universal Waste Batteries.</p> <p>According to RCRA Info, Apple’s Santa Clara location was also assigned a second EPA ID Number (i.e., CAT 000 623 983) in September of 1986. This second EPA ID Number is related to a historic clean-up, initiated by one of the previous owners of the site, Synergy Semiconductor. On November 6, 2020, Apple notified EPA that this specific cleanup activity and the EPA ID Number associated with the cleanup (i.e., CAT 000 623 983), are no longer active under RCRA.</p>		
<b>NAICS:</b>	334111 [Electronic Computer Manufacturing].		
<b>SIC:</b>	3571 [Electronic Computers].		
<b>Facility/Site Personnel Participating in Inspection:</b>			
Tom Huynh, PE	Apple, Inc.	EHS Manager	<a href="mailto:tom.huynh@apple.com">tom.huynh@apple.com</a> (408) 595-0947

Kevin Sung	Apple, Inc.	EHS Engineer	<a href="mailto:kevin_sung@apple.com">kevin_sung@apple.com</a> (408) 908-0167
Grace Fisk	Apple, Inc.	EHS Engineer	<a href="mailto:gfisk@apple.com">gfisk@apple.com</a>
Sameei Al Khafaji	ACT Enviro	Field Chemist	<a href="mailto:salkhafaji@actenviro.com">salkhafaji@actenviro.com</a> (408) 548-5050
Demonte Rose	ACT Enviro		
Allen Sherlock	Apple, Inc.		
Joe Loft	Apple, Inc.	Facilities Engineer	
<b>Other Personnel Participating in Inspection:</b>			
Frederick Chun	Santa Clara Fire Department	Assistant Fire Marshall / CUPA Manager	<a href="mailto:fchun@santaclaraca.gov">fchun@santaclaraca.gov</a> (408) 615-4961
<b>Inspector(s):</b>			
Christopher Rollins (Lead Inspector)	<b>CHRISTOPHER ROLLINS</b> Digitally signed by CHRISTOPHER ROLLINS Date: 2024.04.25 09:43:36 -07'00'		
	US EPA, Region 9 Mail Code: ENF 2-2	Environmental Protection Specialist	<a href="mailto:rollins.christopher@epa.gov">rollins.christopher@epa.gov</a> (415) 947-4166
Anuka King	US EPA, Region 9 Mail Code: ENF 2-2	Physical Scientist	<a href="mailto:king.anuka@epa.gov">king.anuka@epa.gov</a> (415) 972-3470
Mark Anthony Relon	US EPA, Region 9 Mail Code: ENF 2-2	Physical Scientist	<a href="mailto:relon.markanthony@epa.gov">relon.markanthony@epa.gov</a> (415) 972-3252
<b>Peer Review:</b>			
Mark Anthony Relon	<b>MARK ANTHONY RELON</b> Digitally signed by MARK ANTHONY RELON Date: 2024.04.29 17:31:53 -07'00'		
	US EPA, Region 9 Mail Code: ENF 2-2	Physical Scientist	<a href="mailto:relon.markanthony@epa.gov">relon.markanthony@epa.gov</a> (415) 972-3252
Kaoru Morimoto	<b>Morimoto, Kaoru</b> Digitally signed by Morimoto, Kaoru Date: 2024.04.30 08:42:42 -07'00'		
	US EPA, Region 9 Mail Code: ENF 2	Assistant Director, Air, Waste & Chemicals Branch	<a href="mailto:morimoto.kaoru@epa.gov">morimoto.kaoru@epa.gov</a> (415) 972-3306

## **SECTION I – INTRODUCTION**

### **Purpose of the Inspection**

The purpose of the inspection was to determine Apple, Inc.'s (Apple) compliance with applicable federal environmental statutes and regulations, and in particular, the Resource Conservation and Recovery Act (RCRA), as amended, the hazardous waste regulations provided in the Code of Federal Regulations (CFR), Chapter 40, Parts 260 - 266, 268, 270, 273, and 279, the California Health and Safety Code (HSC), Division 20, Chapter 6.5; and the California Code of Regulations (CCR), Title 22, Division 4.5.<sup>1</sup>

### **Opening Conference**

#### **August 17, 2023**

On August 17, 2023, EPA Region 9 Inspector Christopher Rollins, arrived at Apple's 3250 Scott Blvd facility in Santa Clara, CA at 10:00 am. Frederick Chun, Assistant Fire Marshall for the Santa Clara Fire Department (the CUPA)<sup>2</sup> was already onsite. EPA's participation in the inspection was unannounced. However, the CUPA inspector had previously scheduled a Large Quantity Generator (LQG) and Business Plan inspection with the facility three weeks prior.

Upon our arrival at the main entrance, both EPA and the CUPA were greeted by Apple's environmental staff. The inspectors were introduced to Tom Huynh (EHS Manager), Kevin Sung (EHS Engineer) and Grace Fisk (EHS Engineer) of Apple at 10:05 am.

After introductions, the inspectors were escorted to a small table located outside of the facility to begin the Opening Conference. The EPA inspector (Christopher Rollins) presented his federal credentials to the Apple representatives and informed the facility that this RCRA hazardous waste inspection was based on a Tip and Complaint from the public.

EPA also informed Apple, that the agency would be evaluating the facility's RCRA operations and reviewing the facility's records to confirm compliance with the LQG requirements. Once EPA answered some of the facility's questions regarding the Tip and Complaint the inspector gave an overview of the inspection process to all those present.

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<sup>1</sup> All citations in this report that refer to the California Code of Regulations (CCR) refer to Division 4.5 of Title 22 of the current California Code of Regulations. EPA is enforcing California hazardous waste management program requirements as approved and authorized by the United States on August 1, 1992 (see 57 Fed. Reg. 32726, July 23, 1992), September 26, 2001 (66 Fed. Reg. 49118, September 26, 2001), and October 7, 2011 (see 76 Fed. Reg. 62303, October 7, 2011). Corresponding Federal citations are provided as a convenience in brackets.

<sup>2</sup> CUPA stands for the Certified Unified Program Agency and is made up of local entities certified by CalEPA to implement and enforce six hazardous waste and hazardous materials regulatory management programs in California.

The inspection would consist of a general walk-through of the facility, which would include the facility's Central Accumulation Area (CAA)<sup>3</sup>, Satellite Accumulation Areas (SAAs), and Laboratories. EPA would also review the facility's storage records, hazardous waste manifests, and other operating records required under RCRA. EPA then donned personal protective equipment and began the facility walk-through<sup>4</sup>.

### August 18, 2023

The following day, Inspector Rollins continued the RCRA inspection and arrived at the Apple facility at 8:15 am. The purpose of the second day of inspections was to review records and focus on the waste generation process onsite. EPA departed the site at 2:29 pm.

The CUPA's Frederick Chun did not participate in EPA's second day of inspections. However, EPA's Anuka King from Region 9's Risk Management Program managed under the Clean Air Act (i.e., 112 r Program) did accompany Inspector Rollins on the inspection.

### January 16, 2024

A follow-up inspection was conducted by EPA Region 9 at the Apple site on January 16, 2024. The purpose of the follow-up inspection was to walk the B(4) Floor and review certain B(4) in order to understand Apple's B(4) processes, and the wastes generated from those processes.

EPA inspectors Christopher Rollins and Mark Anthony Relon participated in the follow-up inspection. No CUPA inspectors were present during this follow-up inspection, which began at 9:20 am and ended at 4:50 pm the same day.

### Facility/Site Description

Apple's Santa Clara facility is a B(4) B(4) Research and Development (R&D) Facility. The facility has two buildings in the immediate area and has a total of approximately 300 - 350 employees. The Santa Clara site has been in operation since about 2016. Apple's main building (Building 1) operates 24 hours a day, 5 days a week (M-F) and generates primarily RCRA organic and corrosive hazardous wastes (i.e., solids and liquids) from various R&D operations onsite. Building 2 serves as an office building and generates no wastes.

The Bay Area Air Quality Management District (BAAQMD) issued Apple a Permit to Operate (Plant No. 22839) under the Clean Air Act on or about May 6, 2023 (Attachment B). The permit

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<sup>3</sup> As of May 30, 2017, EPA refers to less than 90-day hazardous waste accumulation areas (for Large Quantity Generators) and less than 180-day hazardous waste accumulation areas (for Small Quantity Generators) as Central Accumulation Areas (reference 81 FR 85732 and 81 FR 85743).

<sup>4</sup> The observations of each walk-through inspection and the records review findings are captured in "Section II – Observations, Potential Violations and Areas of Concern" of this inspection report. Only those observations that were recorded and/or documented as potential violations or areas of concern were noted in Section II.

allows the facility to use solvents and corrosives at their Solvent Sink Stations, Solvent Vapor Stations, in their Wipe Cleaning Operations, and in their [REDACTED] and Solvent Base [REDACTED] Operations. These same chemicals once spent are potentially regulated under RCRA as federal and/or state regulated hazardous wastes. Apple's BAAQMD permit is expected to expire on May 1, 2024.

On November 20, 2020, Apple obtained an Industrial Wastewater Discharge Permit (Permit No. SC-461B) from the San Jose-Santa Clara Regional Wastewater Facility (Attachment C) and manages an Acid Waste Neutralization (AWN) Tank System and a Heavy Metals Rinsate (HMR) Tank System that were issued under the State of California's "Permit By Rule," provisions [Title 22 of the California Code of Regulations (CCR) § 67450.2]. As such, the facility is authorized to treat corrosive hazardous wastes in its AWN Tank System, separate out heavy metals using the facilities HMR Tank System, and discharge the treated wastewater directly to the sanitary sewer (Attachments D & E).

The facilities AWN Tank System includes four tanks, comprising of equalization and pH adjustment tanks. Apple's HMR Tank System includes two lift stations (SLW2/HMR-LS and HMR-LS), two equalization tanks (HMR-TNK-2 and HMR-TNK-4), a pH adjuster tank (HMR-TNK-3), a vacuum distillation evaporator (VDE-1), and a heavy metal concentrate tank (HMC-TNK-2). Apple's AWN Tank System and HMR Tank System are also covered under the State of California's "Permit by Rule" provisions.

Apple also manages a 1,700-gallon RCRA hazardous waste solvent tank that is also regulated under California's "Permit by Rule"<sup>5</sup> provisions (Attachment F). The spent solvent waste accumulated in the facility's spent solvent tank is generated from various R&D [REDACTED] [REDACTED] operations upstream. During the August 17, 2023 inspection, EPA documented that Apple's 1,700-gallon solvent tank vents to a 55-gallon canister of activated carbon. At the time of the inspection, the canister of activated carbon was not permitted under the Clean Air Act. Nor was the canister being managed by Apple under RCRA's air emission regulations.

The facility's solvent waste tank system is comprised of a 67-gallon double-walled solvent waste lift station (SW-LS) that pumps solvent wastes within the building; a solvent waste collection cabinet (SW-CC)<sup>6</sup> with two 55-gallon containers used historically for storage; a 1,700-gallon double-walled storage tank (SW-TNK-2); and a solvent waste transfer station (SW-TFS-1). The

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<sup>5</sup> The State of California's "Permit By Rule" Provisions are codified under 22 CCR § 67450.2.

<sup>6</sup> Currently, the solvent waste collection cabinet is no longer in service and does not directly contact or store solvents pumped through the system.

solvent waste transfer station is used to transfer solvents from the storage tank to a vacuum truck or tote for the purposes of disposal.

The specific waste streams observed and/or documented onsite consist primarily of spent solvent waste, corrosive wastes, corrosive solvent mixtures, sludges and solid lab debris. Based on the facility’s 2021 Biennial Report the facility reports generating federally regulated hazardous waste with EPA waste codes D001, D002, D003, D004, D011, D035, F003 and F005.

According to the California Environmental Reporting System (CERS), Apple was last inspected by the CUPA on October 26, 2020 and December 23, 2020. No RCRA violations were documented during these inspections.

EPA checked the agency’s RCRAInfo database and according to that database, R9 doesn’t appear to have inspected this location prior to the Agency’s August 17, 2023 inspection.

**SECTION II – OBSERVATIONS, POTENTIAL VIOLATIONS AND AREAS OF CONCERN**

Observation(s)	Photograph(s)	Potential Violations
<p><u>Observation #1 (Aug 2023):</u> EPA observed nineteen closed 5-gallon containers of liquid waste stacked against the wall in Apple’s Building 1 East - Compartment 1 Indoor CAA Shed (The Bunker Area). The labels on the majority of the nineteen containers identified the contents of each waste stream as containing corrosive liquids (D002 Waste).</p> <p>The nineteen containers were stacked in a pile three containers high, four containers across, and two containers in depth. Two of the 5-gallon containers on the very top of the pile (Photo 1a), were missing their hazardous waste labels and not properly marked with Accumulation Start Dates (ASDs), as required while in storage at the CAA.</p> <p>According to Apple, the two containers missing their labels and</p>	<div style="background-color: black; color: red; text-align: center; padding: 20px;">B(4)</div> <p style="text-align: center;">Photo 1a (P8170006.JPG)</p> <div style="background-color: black; color: red; text-align: center; padding: 20px;">B(4)</div> <p style="text-align: center;">Photo 1b (P8180009.JPG)</p>	<p><u>Potential Violation #1 (Aug 2023):</u> EPA observed nineteen closed 5-gallon containers of corrosive liquids (D002 Waste) in Apple’s Bunker Area. Two of the containers were not properly dated to indicate how long the waste had been stored onsite or marked to identify the contents as hazardous under RCRA.</p> <p>In addition, eleven of the hazardous waste container labels were not clearly visible for inspection, and one container was stored onsite for greater than 90-days, with an ASD of March 2, 2023. These waste streams all appear to be RCRA regulated hazardous waste.</p> <p>Sections <a href="#">§§ 66262.34(a)(1)(A) and 66262.34(f)(1) – (3)</a> of Title 22 of the California Code of Regulations (CCR) states that generators who accumulate hazardous waste on site without a permit or grant of interim</p>

ASDs were placed in the Bunker Area the morning of EPA's inspection. The staff maintaining the area would later return to properly mark and date the waste in accordance with RCRA. These 5-gallon containers were required to be properly labeled and dated prior to arriving at the CAA.

The inspectors also observed that eight of the nineteen 5-gallon containers stacked in the back of the pile and three of the containers stacked in the front of the pile were not clearly visible for inspection, without physically moving each of the containers. In addition, one of the nineteen containers of corrosive waste stacked in the back of the pile was stored onsite for greater than 90-days (Photo 1c). The ASD on this container was listed as March 2, 2023, and the contents for this container were marked as "B(4) 7".

The next day, Apple did mark the two unlabeled containers, properly identifying the contents of the waste streams as corrosive waste (D002 Waste). The facility recorded the ASD of August 17, 2023 on each container.

Apple managed this area as a less than 90-day hazardous waste accumulation area. Prior to EPA's inspection, no Apple employees were actively working in the Bunker Area, filling or emptying any of the containers while they were in storage.

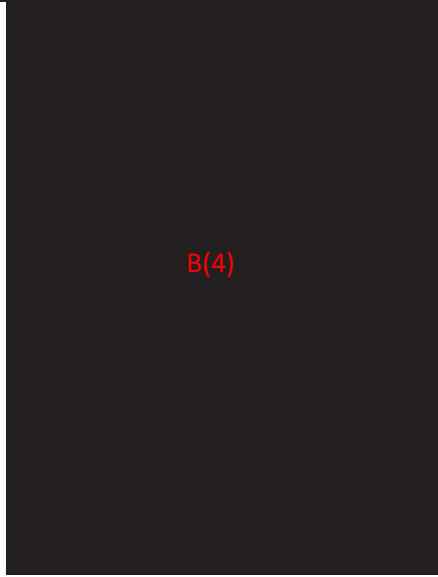


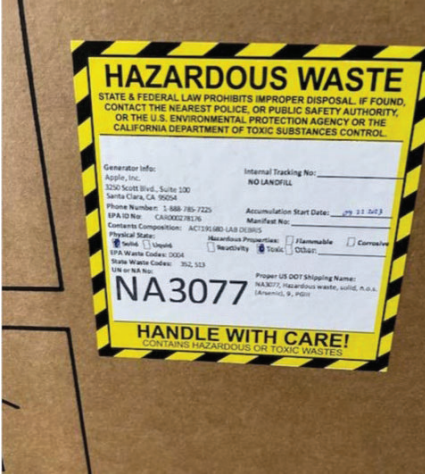

Photo 1c (P8180010.JPG)

status shall comply with the following:

- (1) The date upon which each period of accumulation begins shall be clearly marked and visible for inspection on each container and portable tank;
- (2) The date the applicable accumulation period specified in subsection (a) or (d) of this section begins, for purposes of subsections (a) and (b) of this section, shall be clearly marked and visible for inspection on each container and tank;
- (3) Each container and tank used for onsite accumulation of hazardous waste shall be labeled or marked clearly with the words, "Hazardous Waste." Additionally, all containers and portable tanks shall be labeled with the following information:
  - A) Composition and physical state of the wastes;
  - B) Statement or statements which call attention to the particular hazardous properties of the waste (e.g., flammable, reactive, etc.);
  - C) Name and address of the person producing the waste [\[40 CFR § 262.17\(a\)\(5\)\(A\) – \(5\)\(C\)\]](#).

Section [§ 66262.34\(c\)](#) of Title 22 of the CCR states that a generator who accumulates hazardous waste for more than 90 days is an operator of a storage facility and is subject to the requirements of chapters 14 and 15 of this division and the permit

<sup>7</sup> Later it was determined by EPA that the correct name for this waste stream was "B(4)". According to Apple's Safety Data Sheet, this chemical substance was manufactured in Japan and has no pH or Flash Point value established for this product.

<p>The Bunker Area is located downstream from Apple’s initial waste generation activities.</p>	 <p>RTC Photo</p>	<p>requirements of chapter 20 of this division unless the generator has been granted an extension to the 90-day period or meets the requirements of subsection (d) or (e) of this section <a href="#">[40 CFR § 262.17(b)]</a>.</p> <p><b>The facility returned to compliance with these potential violations on or about September 8, 2023. Specifically, Apple labeled and dated the two unknown 5-gallon containers of waste, processed the 5-gallon container of “B(4)” waste through the Acid Waste Neutralization (AWN) System, and manifested the empty container off for disposal on Manifest 018419007 FLE (See RTC Photo).</b></p> <p><b>Lastly, according to Apple, the facility changed its storage procedures so that all of the labels on the 5-gallon containers in the Bunker Area are now stored with their labels pointing outward.</b></p>
<p><u>Observation #2 (Aug 2023):</u> EPA observed one open 5-gallon container marked as “Adhesive Liquids and Tape” in Apple’s Bunker Area (Photo 2a). According to the label on the container, the waste was being managed as both a flammable and toxic waste (Photo 2b). At the time of the inspection, EPA could not determine whether this waste was federal, or state only regulated waste.</p> <p>The container had an ASD of July, 22, 2023 and appeared to have too many metal canisters of flammable liquid waste inside of the container that prevented the lid from closing properly.</p>	 <p>Photo 2a (P8170013.JPG)</p>	<p><u>Potential Violation #2 (Aug 2023):</u> EPA observed an open 5-gallon container of “Adhesive Liquids and Tape” in Apple’s Bunker Area. It was later determined that this waste stream was California Only waste and therefore not regulated by EPA.</p> <p>Section <a href="#">§ 66265.173(a)</a> of Title 22 of the CCR states that a container holding hazardous waste shall always be closed during transfer and storage, except when it is necessary to add or remove waste.</p> <p><b>The facility returned to compliance with this potential violation on August 18, 2023, when Apple closed the container in accordance with California’s regulations (See Photo 2c).</b></p>



Apple managed this area as a less than 90-day hazardous waste storage area. Prior to EPA's inspection, no Apple employees were actively working in the Bunker Area, filling or emptying any of the containers that were in storage.

The Bunker Area is located downstream from Apple's initial waste generation activities.

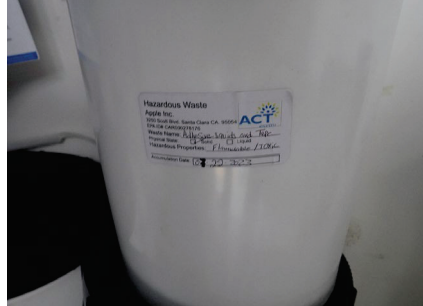


Photo 2b (P8170014.JPG)



Photo 2c (P8180013.JPG)

Observation #3 (Aug 2023): EPA observed a closed 5-gallon container marked as "Silicone" waste in Apple's Bunker Area (Photo 3a). According to the label on the container the waste was being managed as a toxic waste. At the time of the inspection, EPA could not determine whether this waste was federal, or state only regulated waste.

In addition, the container appeared to be stored onsite for greater than 90-days. The ASD on this container was recorded as March 16, 2022 on the label.

Apple managed this area as a less than 90-day hazardous waste



Photo 3a (P8170015.JPG)

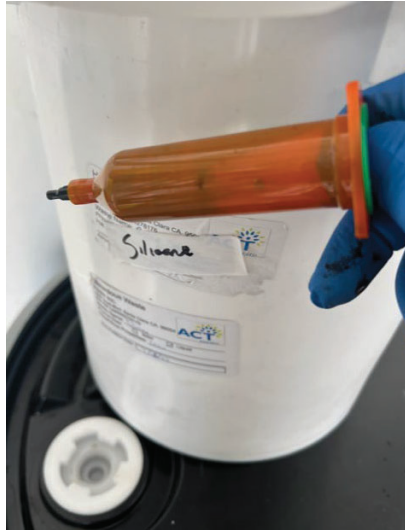
Potential Violation #3 (Aug 2023): EPA observed a closed 5-gallon container of "Silicone" waste in Apple's Bunker Area. Based on the container's ASD the waste was stored onsite for more than 90-days (ASD = March 16, 2022), without a RCRA permit as required by State law.

It was later determined that this waste was California Only waste (NRHW), and therefore not regulated by EPA.

Section [§ 66262.34\(c\)](#) of Title 22 of the CCR states that a generator who accumulates hazardous waste for more than 90 days is an operator of a storage facility and is subject to

storage area. Prior to EPA's inspection, no Apple employees were actively working in the Bunker Area, filling or emptying any of the containers that were in storage.

The Bunker Area is located downstream from Apple's initial waste generation activities.



RTC Photo

the requirements of chapters 14 and 15 of this division and the permit requirements of chapter 20 of this division unless the generator has been granted an extension to the 90-day period or meets the requirements of subsection (d) or (e) of this section.

**The facility returned to compliance with this potential violation on or about September 8, 2023. Specifically, Apple removed the one dispenser tube inside of the container used to dispense adhesives (See RTC Photo) and disposed of the material as NRHW on Manifest 018419007 FLE.**

Observation #4 (Aug 2023): EPA observed different sized waste containers on the floor in Apple's Bunker Area (Photo 4a). Specifically, EPA observed six 1-gallon containers of "B(4)" a small container of "Boric Acid," and three unknown containers of waste in this area.

According to Apple, the waste containers on the floor were expired waste that were placed in the Bunker Area the morning of August 17, 2023, and just hadn't been marked as hazardous waste or dated, prior to EPA's arrival. These waste containers were required to be properly labeled and dated prior to arriving at the CAA.

Apple managed this area as a less than 90-day hazardous waste storage area. Prior to EPA's inspection, no Apple employees were actively working in the Bunker Area, filling or emptying



Photo 4a (P8170016.JPG)

Potential Violation #4 (Aug 2023): EPA observed six 1-gallon waste containers of "B(4)" (D002 Waste), a small container of "Boric Acid" (NRHW), and three unknown containers in Apple's Bunker Area. At the time of EPA's inspection, a waste determination had not been performed on the waste streams to determine if the materials were hazardous waste or whether they were regulated federally or by the State of California.

It was later determined that this waste was a mixture of NRHW and RCRA regulated hazardous waste. Therefore, some of the waste is regulated by EPA.

Section [§ 66262.11](#) of Title 22 of the CCR states that a person who generates a waste, as defined in section 66261.2, shall determine if that waste is a hazardous waste [\[40 CFR § 262.11\]](#).

**The facility returned to compliance with this potential violation on or**

<p>any of the containers that were in storage.</p> <p>The Bunker Area is located downstream from Apple’s initial waste generation activities.</p>		<p><b>about September 8, 2023. Specifically, Apple properly containerized, labeled and dated the waste containers in this area in accordance with RCRA.</b></p>
<p><u>Observation #5 (Aug 2023):</u> EPA observed one open 55-gallon container marked as “Mega Posit,” waste in Apple’s Bunker Area (Photo 5a). The label on the container indicated that the waste was being managed as a corrosive liquid (Photo 5b).</p> <p>According to Apple, the container’s bung cap was left open in order to prevent the container from building up too much pressure while in storage. EPA informed the facility that the container must always remain closed during storage, and recommended that the facility purchase a closure device, for future use, to allow the container to periodically vent pressure while in storage.</p> <p>Apple managed this area as a less than 90-day hazardous waste storage area. Prior to EPA’s inspection, no Apple employees were actively working in the Bunker Area, filling or emptying any of the containers that were in storage.</p> <p>The Bunker Area is located downstream from Apple’s initial waste generation activities.</p>	<div> </div> <p>Photo 5a (P8170020.JPG)</p> <div> </div> <p>Photo 5b (P8170021.JPG)</p>	<p><u>Potential Violation #5 (Aug 2023):</u> EPA observed one open 55-gallon container marked as “Mega Posit,” waste in Apple’s Bunker Area. The waste was being managed as a corrosive liquid (D002 Waste).</p> <p>According to Apple, the container was left open in order to prevent the container from building up too much pressure while in storage. This waste stream appears to be a RCRA regulated hazardous waste.</p> <p>Sections <a href="#">§§ 66262.34(a)(1)(A) and 66265.173(b)</a> of Title 22 of the CCR states that a container holding hazardous waste shall not be opened, handled, transferred or stored in a manner which may rupture the container or cause it to leak. Re-use of containers for transportation shall comply with the requirements of the U.S. Department of Transportation regulations, including those set forth in 49 CFR section 173.28 <a href="#">[40 CFR § 262.17(a)(1)(iv)(A)]</a>.</p> <p><b>The facility returned to compliance with this potential violation on or about September 8, 2023. Specifically, Apple closed the 55-gallon container of “Mega Posit,” while in storage (See Photo 5c) and then placed the waste through the Acid Waste Neutralization (AWN) System.</b></p> <p><b>Moving forward, Apple states that the “Mega Posit” will no longer be managed in a 55-gallon container</b></p>

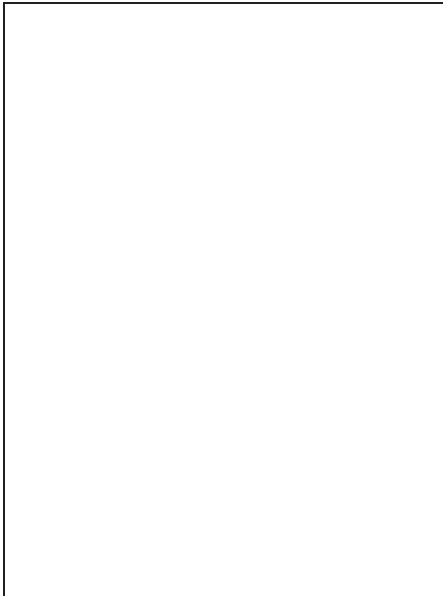


Photo 5c (P8180012.JPG)

but in a 5-gallon container and poured directly into the AWN Tank System.

Observation #6 (Aug 2023): EPA observed one 1,700-gallon stainless-steel solvent waste tank (SW-TNK-2) inside Building 1 of Apple’s facility (Photo 6a). The stainless steel, double-walled tank is used for the accumulation of spent solvent waste generated from R&D operations onsite, and is filled continuously on a 24 hour, 5-days a week basis (M-F).

Based on Apple’s records, the spent solvent waste was being managed as a NRHW liquid (CA-133 – Attachment G). Specifically, the waste was identified as “Water with Solvents,” directly on the hazardous waste label posted on Apple’s solvent waste tank (Photos 6a and 6b).

Previous waste profiles and manifests identify Apple’s spent solvent waste as containing either F-Listed waste (D001 and F003 waste) or ignitable waste (D001 waste). Both of the previous waste streams are federally regulated. Therefore, if regulated as a D001 or F003 waste, Apple would be required to store,



Photo 6a (P8170051.JPG)

Potential Violation #6 (Aug 2023): EPA observed a 1,700-gallon stainless-steel, double-walled solvent waste tank (SW-TNK-2) inside Building 1 of Apple’s facility. The contents of the hazardous waste tank were being managed as a NRHW liquid (CA-133 Waste). To date, Apple has not provided evidence regarding how the spent solvents were determined to be California Only waste.

After EPA’s inspection it was determined that the source of the spent solvent waste entering the solvent waste tank is characteristic for ignitability and should be, at a minimum, managed as a D001 hazardous waste stream at the point of origination.

Moreover, Apple appears to have been improperly treating the waste entering this hazardous waste unit, without a permit by diluting the solvent waste with water and other wastes.

Under RCRA, diluting hazardous waste whether intentionally or unintentionally to remove a wastes’

manifest and dispose of the solvents based on specific Land Disposal Restrictions (LDR) listed under 40 CFR Part 268 of RCRA. At the time of the inspections Apple did not provide adequate documentation verifying why the facility is currently managing their solvent waste as California Only Waste (CA-133).

Later, it was determined by EPA (See Potential Violations #9 and #10) that the source of the waste that is being placed in the solvent waste tank meets the definition of ignitable waste (D001 Waste). As such, the tank is regulated as a RCRA hazardous waste storage tank.

At the time of EPA's inspection, the spent solvent tank was in operation, not being repaired or solvents removed while in service, and the tank was not being managed under any exemptions.

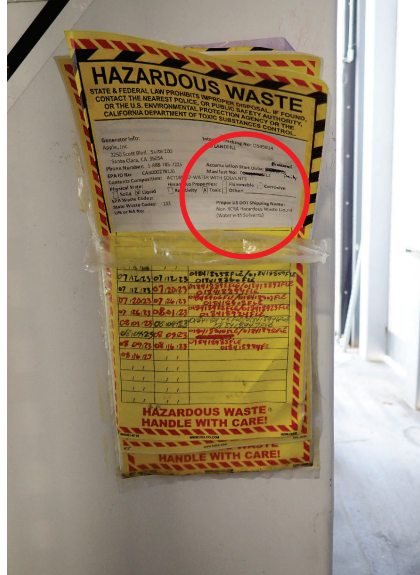


Photo 6b (P8170052.JPG)

characteristics is considered a form of treatment. It is improper to treat hazardous waste without a permit unless the type of treatment is covered under an exemption.

Apple does not have a permit to treat its solvent waste in the 1,700-gallon solvent waste tank. Nor does the facility appear to meet an exemption from treatment under RCRA.

Section [§ 66262.11](#) of Title 22 of the CCR states that a person who generates a waste, as defined in section 66261.2, shall determine if that waste is a hazardous waste [\[40 CFR § 262.11\]](#).

Section [§ 66270.1\(c\)](#) of Title 22 of the CCR states that a permit is required for the "transfer," "treatment," "storage," and "disposal of any waste which is hazardous waste pursuant to section 66261.3 and as defined in section 66260.10 [\[40 CFR § 270.1\(c\)\]](#).

**These potential violations are still outstanding.**

Observation #7 (Aug 2023): EPA observed one 55-gallon canister of "Activated Carbon" on the roof of Building 1 (Photo 7a). The container was connected to Apple's 1,700-gallon spent solvent tank (SW-TNK-2). The device was used to capture Volatile Organic Compounds (VOCs) released from the spent solvent tank located directly below. This device was not described or referenced in Apple's October 2022 Hazardous Waste Tank System Assessment.



According to Apple, the device was covered under a Clean Air Act



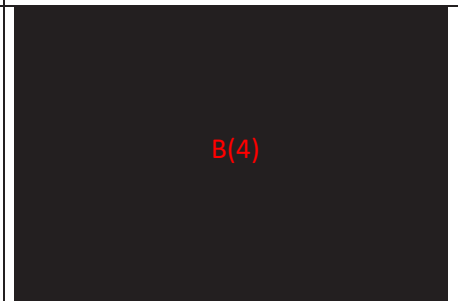
Photo 7a (P8170062.JPG)


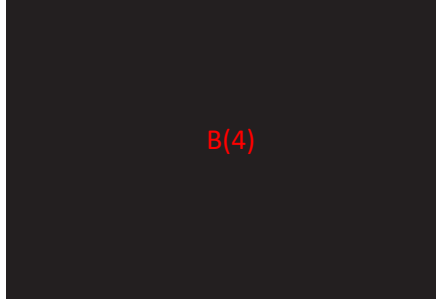
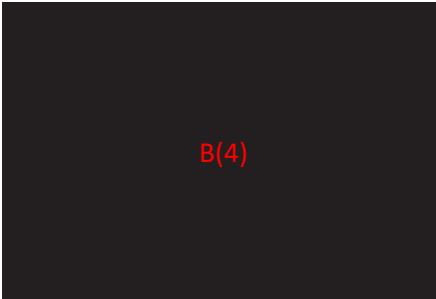
Potential Violation #7 (Aug 2023): EPA observed a 55-gallon canister of "Activated Carbon" on the roof of Building 1. At the time of the inspection, Apple's canister of "Activated Carbon" was not covered under the facility's Clean Air Act permit as an air emissions device. Nor was the device included or referenced in Apple's October 2022 Hazardous Waste Tank System Assessment.

Later it was determined that Apple has been managing their "Activated Carbon" as a NRHW since at least December 14, 2020. However, Apple

<p>application submitted to the BAAQMD. The use of “Activated Carbon” canisters to remove VOCs can be regulated under both the Clean Air Act and RCRA. At the time of EPA’s inspection, BAAQMD had not received Apple’s Clean Air Act Permit application to regulate the container as a device under the Clean Air Act<sup>8</sup>.</p> <p>On September 13, 2023, Apple applied for a Permit Modification to BAAQMD requesting that the facility’s 55-gallon canister of “Activated Carbon” be added as an abatement device for the facility’s 1,700-gallon solvent waste tank (Attachment H).</p>	 <p>Photo 7b (P8170061.JPG)</p>	<p>does not appear to have performed a waste determination on the spent “Activated Carbon,” between 2020 and 2023, to justify why it has been managing the waste as NRHW. Further review of this waste stream and the process by which it is managed is required to determine if the “Activated Carbon” is a hazardous waste or not at disposal.</p> <p>Section <a href="#">§ 66262.11</a> of Title 22 of the CCR states that a person who generates a waste, as defined in section 66261.2, shall determine if that waste is a hazardous waste <a href="#">[40 CFR § 262.11]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
<p><u>Observation #8 (Jan 2024):</u> EPA observed three chemicals being used in Tool 8-02C in <b>B(4)</b> <b>B(4)</b> - <b>B(4)</b> of Apple’s <b>B(4)</b> Area (Photo 8a). The three chemicals used were “<b>B(4)</b> <b>B(4)</b> (Flashpoint = 90°F)”, “<b>B(4)</b> <b>B(4)</b> (Flashpoint = 52.5°F)”, and “<b>B(4)</b> <b>B(4)</b> (pH = 13.2)”. Once spent, the <b>B(4)</b> <b>B(4)</b>” and “<b>B(4)</b>” wastes are managed as ignitable (D001 Waste) solvents and pumped into 5-gallon carboy containers that are located under the grated floor in <b>B(4)</b> (Attachments I – K). The spent solvent containers are then transferred to Apple’s Bunker Area for long-term storage.</p> <p>However, the “<b>B(4)</b>” chemical is not used as a solvent in the process but is accumulated in the same 5-gallon carboys used to</p>	 <p>Photo 8a (IMG_5542.JPG)</p>	<p><u>Potential Violation #8 (Jan 2024):</u> EPA observed the chemical “<b>B(4)</b>” being used in Tool 8-02C in <b>B(4)</b> <b>B(4)</b> - <b>B(4)</b> of Apple’s <b>B(4)</b> Area. Based on the SDS (Attachment K), “<b>B(4)</b>” has a pH of 13.2 prior to use. Under RCRA, a spent liquid with a pH of greater than 12.5 may be regulated as a corrosive waste (D002 Waste) when disposed of and therefore should be evaluated for its corrosive properties upon disposal. Apple does not appear to have performed a waste determination on the spent waste and this waste stream appears to be a RCRA regulated hazardous waste.</p> <p>Moreover, Apple does not appear to have a permit to treat its solvent or corrosive waste in the 5-gallon carboy units. Nor does the facility appear to meet an exemption from treatment, under RCRA.</p>

<sup>8</sup> A copy of Apple’s Clean Air Act permit application was requested, and it was documented that Apple applied for the device to be covered under the Clean Air Act on September 13, 2023, after EPA’s initial RCRA inspection.

<p>store the spent solvents. Based on the SDS, “B(4)” has a pH of 13.2 prior to use. Under RCRA, a spent liquid with a pH greater than or equal to 12.5 is considered a corrosive waste (D002 Waste). Apple does not appear to have performed a waste determination on the 5-gallon carboys, to verify whether the mixture of spent solvents (D001 Waste) and the “B(4)” waste, are also hazardous for corrosivity at the point of origination.</p> <p>At the time of EPA’s inspection, Apple was managing the 5-gallon carboy containers (D001 Waste) used to accumulate the solvent waste, as SAA containers. These containers are attached to Apple’s solvent tools and are filled on a continuous basis.</p> <p>Under RCRA, SAA containers and containers under 26.4-gallons (0.1 m<sup>3</sup>) are exempt from the RCRA air emission requirements for containers. Therefore, the containers and the equipment in contact with solvents greater than 10% ppmw are not subject to the monitoring, tagging or record keeping requirements for hazardous waste units under Subparts BB and CC of RCRA.</p>		<p>Section <a href="#">§ 66262.11</a> of Title 22 of the CCR states that a person who generates a waste, as defined in section 66261.2, shall determine if that waste is a hazardous waste <a href="#">[40 CFR § 262.11]</a>.</p> <p>Section <a href="#">§ 66270.1(c)</a> of Title 22 of the CCR states that a permit is required for the “transfer,” “treatment,” “storage,” and “disposal of any waste which is hazardous waste pursuant to section 66261.3 and as defined in section 66260.10 <a href="#">[40 CFR § 270.1(c)]</a>.”</p> <p>Please note, diluting hazardous waste whether intentionally or unintentionally to remove a wastes’ characteristics is considered a form of treatment. Under RCRA it is improper to treat hazardous waste without a permit unless the type of treatment is covered under an exemption.</p> <p><b>These potential violations are still outstanding.</b></p>
<p><u>Observation #9 (Jan 2024):</u> EPA observed two solvent baths of “Isopropyl Alcohol” (100%) being used in Apple’s Solvent B(4) B(4) (Tool 8-112) and Solvent B(4) B(4) (Tool 6-15) tools located in the facility’s B(4) – B(4) Area (Photos 9a – 9d). Signs were posted on the outside of the tools, documenting what specific solvents were being used in each</p>	 <p>Photo 9a (IMG_5554.JPG)</p>	<p><u>Potential Violation #9 (Jan 2024):</u> Apple failed to perform a waste determination for its spent “Isopropyl Alcohol” waste generated from the facility’s Solvent B(4) B(4) (Tool 8-112) and B(4) B(4) (Tool 6-15) tools located in the facility’s B(4) – B(4) Area. For both of these tools, “Isopropyl Alcohol” once spent may be regulated as a D001 ignitable</p>

<p>tool. At the time of EPA’s inspection, the “Isopropyl Alcohol” solvents were not being managed as a waste but as a product.</p> <p>Under RCRA, once a solvent is classified as spent, Apple is required to perform a waste determination to determine whether the materials are hazardous in nature at the point of origination.</p> <p>Furthermore, according to Apple’s SDS for “Isopropyl Alcohol”, the chemical contains highly flammable liquids and has a flash point of 53.6°F, prior to use (Attachment L). Under RCRA, a spent solvent waste with a flash point of less than 140°F is considered characteristically hazardous for ignitability (D001 waste) and therefore should be tested to confirm if the waste is hazardous due to its ignitability.</p> <p>In addition, Apple also does not appear to have properly characterized its “ B(4) ” waste, to verify whether this waste is corrosive (D002 Waste) at the point of origination. According to the SDS for “ B(4) ” there is no data available on the pH for this chemical product prior to use (Attachment M). Under RCRA, Apple is required to properly characterize the pH of the liquid to determine whether the liquid is characteristically hazardous for corrosivity (D002 Waste) upon disposal.</p>	 <p>Photo 9b (IMG_5555.JPG)</p>  <p>Photo 9c (IMG_5556.JPG)</p>  <p>Photo 9d (IMG_5557.JPG)</p>	<p>waste at the point of origination. This waste stream appears to be a RCRA regulated hazardous waste upon disposal.</p> <p>Apple also failed to properly characterize its “ B(4) ” waste to verify whether this waste is corrosive (D002 Waste) at the point of origination. It is unknown whether this waste stream is RCRA regulated hazardous waste upon disposal.</p> <p>Section <a href="#">§ 66262.11</a> of Title 22 of the CCR states that a person who generates a waste, as defined in section 66261.2, shall determine if that waste is a hazardous waste <a href="#">[40 CFR § 262.11]</a>.</p> <p><b>Please note, diluting hazardous waste whether intentionally or unintentionally to remove a wastes’ characteristics is considered a form of treatment. Under RCRA it is improper to treat hazardous waste without a permit unless the type of treatment is covered under an exemption.</b></p> <p><b>This potential violation is still outstanding.</b></p>
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Observation #10 (Jan 2024): EPA observed at least two solvent baths of “Isopropyl Alcohol” (100% and 98-100%) and one bath of “~~(B)(4)~~” (< 100%), being used in conjunction with Apple’s Solvent ~~(B)(4)~~ (Tool 8-133), ~~(B)(4)~~ (Tool 8-134), and ~~(B)(4)~~ ~~(B)(4)~~ ~~(B)(4)~~ tools located in the facility’s ~~(B)(4)~~ Area (Photos 10a – 10c). Signs were posted on the outside of ~~(B)(4)~~, ~~(B)(4)~~ and the Solvent Spray Processor indicating what specific solvents were being used in each tool. At the time of EPA’s inspection, the “Isopropyl Alcohol” and ~~(B)(4)~~ ~~(B)(4)~~ solvents were not being managed as a waste but as a product.

Under RCRA, once a solvent is classified as spent, Apple is required to perform a waste determination to verify whether the wastes generated are hazardous in nature at the point of origination.

Furthermore, according to Apple’s SDS for “Isopropyl Alcohol (Attachment L)” and “~~(B)(4)~~ (Attachment N)”, the chemicals are highly flammable liquids with flash points of 53.6°F and > 109°F respectively, prior to use. Under RCRA, a liquid waste with a flash point of less than 140°F is considered characteristically hazardous for ignitability (D001 waste) and therefore should be tested to confirm if the wastes are hazardous due to ignitability.

Apple also does not appear to have properly characterized its “~~(B)(4)~~” and “~~(B)(4)~~”



Photo 10a (IMG\_5565.JPG)



Photo 10b (IMG\_5567.JPG)



Photo 10c (IMG\_5568.JPG)

Potential Violation #10 (Jan 2024): Apple failed to properly characterize its spent “Isopropyl Alcohol” and ~~(B)(4)~~ ~~(B)(4)~~ waste generated from the facility’s Solvent ~~(B)(4)~~ (Tool 8-133), ~~(B)(4)~~ (Tool 8-133), and ~~(B)(4)~~ ~~(B)(4)~~ tools located in the facility’s ~~(B)(4)~~ Area as a D001 ignitable waste at the point of origination.

Apple also failed to properly characterize its “~~(B)(4)~~” and “~~(B)(4)~~” wastes to verify whether these wastes are corrosive (D002 Waste) at the point of origination.

All four of these waste streams appear to be RCRA regulated hazardous waste upon disposal.

**Please also note, diluting hazardous waste whether intentionally or unintentionally to remove a wastes’ characteristics is considered a form of treatment. Under RCRA, it is improper to treat hazardous waste without a permit unless the type of treatment is covered under an exemption.**

Section [§ 66262.11](#) of Title 22 of the CCR states that a person who generates a waste, as defined in section 66261.2, shall determine if that waste is a hazardous waste [\[40 CFR § 262.11\]](#).

**This potential violation is still outstanding.**

wastes, to verify whether these wastes are corrosive (D002 Waste) at the point of origination. According to the SDS for “B(4) B(4) (Attachment O)”, the pH has not been evaluated, prior to use and the product contains < 4% of Tetramethylammonium Hydroxide, a known corrosive. In addition, the “B(4)” chemical has a pH between 11.5 and 12.5, prior to use (Attachment P). Under RCRA, a pH greater than or equal to 12.5 is considered a corrosive waste upon disposal.

Observation #11 (Jan 2024): EPA observed that Apple’s solvent waste vents are connected to the facility’s 5-gallon carboy spent solvent containers in Apple’s B(4) Areas (Photo 11a). These same solvent waste vents are also connected to each of the facility’s solvent tools and spray units onsite.

According to Apple, each solvent vent in the B(4) Area is further connected to the facility’s overall solvent exhaust system which carries VOCs from each B(4) to “Activated Carbon” boxes located on the roof of Building 1 (Photo 11b). The purpose of the “Activated Carbon” boxes is to capture any VOCs introduced to the solvent exhaust system, prior to the vapors being released directly to the atmosphere through the two general exhaust stacks (Photo 11c).

Based on the information provided to EPA, it does not appear that the facility has properly tested the “Activated Carbon” for the purposes of

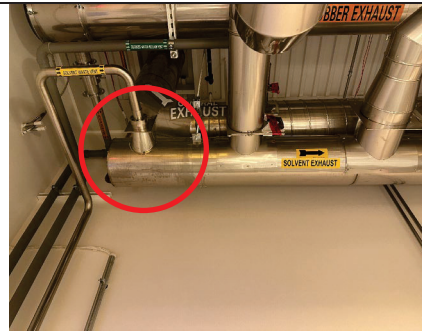


Photo 11a (IMG\_5548.JPG)

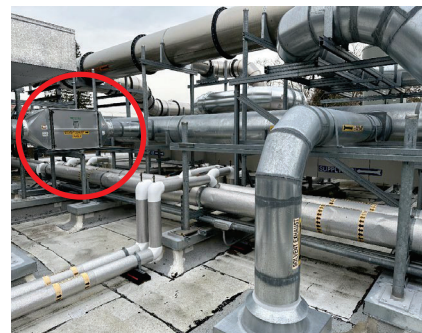


Photo 11b (IMG\_5589.JPG)



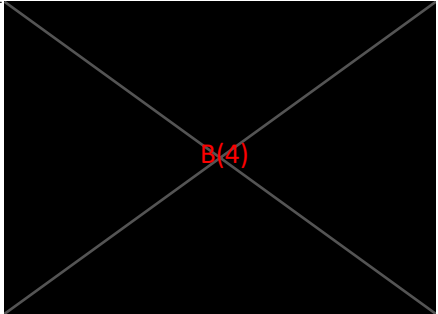
Photo 11c (IMG\_5591.JPG)

Potential Violation #11 (Jan 2024): EPA observed several “Activated Carbon” boxes on the roof of Building 1. Specifically, each of the B(4) in the B(4) Area vent directly to an “Activated Carbon” box which is responsible for filtering out VOCs that are generated onsite.

At the time of the inspection, Apple’s “Activated Carbon” boxes were not covered under the facility’s Clean Air Act permit as an air emissions device. Nor were the devices included or referenced in Apple’s October 2022 Hazardous Waste Tank System Assessment.

Later it was determined that Apple has been managing their “Activated Carbon” as a NRHW since at least December 14, 2020. However, Apple does not appear to have performed a waste determination on the spent “Activated Carbon,” between 2020 and 2023, to justify why it has been managing the waste as NRHW. Further review of this waste stream and the process by which it is managed is required.

Section § 66262.11 of Title 22 of the CCR states that a person who

<p>disposal. Apple manages its “Activated Carbon” waste as NRHW.</p> <p>Apple also does not appear to have included all of the solvent waste streams when calculating the breakthrough times for the “Activated Carbon” boxes to ensure that no VOCs are released into the atmosphere onsite.</p> <p>Apple’s current BAAQMD Permit, does not reference the “Activated Carbon” boxes (i.e., Abatement Device No. A-13). Nor does it discuss the overall management of the boxes.</p> <p>Based on Apple’s 02/23/24 response letter to EPA, the facility confirmed that the devices are part of a pending application for a BAAQMD air permit modification. Additional review of Apple’s test results pertaining to its “Activated Carbon” waste are needed to determine if the waste is regulated as a hazardous waste.</p>		<p>generates a waste, as defined in section 66261.2, shall determine if that waste is a hazardous waste <a href="#">[40 CFR § 262.11]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
<p><u>Observation #12 (Jan 2024)</u>: EPA observed eleven closed 5-gallon containers of liquid waste stacked against the wall in Apple’s Bunker Area (Photo 12a). The labels on these eleven containers identified the contents as corrosive liquids (D002 Waste).</p> <p>The labels on three of the eleven containers were not clearly visible for inspection without physically moving each of the containers (Photo 12a). The ASDs on each container appeared to be less than the 90-day storage time frames for long-term storage (Photo 12b).</p>	 <p>Photo 12a (IMG_5592.JPG)</p>	<p><u>Potential Violation #12 (Jan 2024)</u>: EPA observed eleven closed 5-gallon containers of corrosive liquids (D002 Waste) in Apple’s Bunker Area. Three of the container labels were not clearly visible for inspection.</p> <p>This waste all appeared to be RCRA regulated hazardous waste.</p> <p>Sections <a href="#">§§ 66262.34(a)(1)(A) and 66262.34(f)(1)</a> of Title 22 of the CCR states that generators who accumulate hazardous waste on site without a permit or grant of interim status shall comply with the following:</p> <p>(1) The date upon which each period of accumulation begins</p>

<p>Apple managed this area as a less than 90-day hazardous waste accumulation area. At the time of EPA’s inspection, an Apple employee was actively working in the Bunker Area, but did not appear to be filling or emptying the containers.</p> <p>The Bunker Area is located downstream from Apple’s initial waste generation activities. Apple’s 5-gallon corrosive waste containers are not tested at the point of origination but managed as corrosive waste (D002 Waste) once transferred to the Bunker Area for long-term storage.</p>	 <p>Photo 12b (IMG_5603.JPG)</p>	<p>shall be clearly marked and visible for inspection on each container and portable tank <a href="#">[40 CFR § 262.17(a)(5)(A) – (5)(C)]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
<p><u>Observation #13 (Jan 2024):</u> EPA observed twelve additional closed 5-gallon containers of liquid waste stacked against the opposite wall in Apple’s Bunker Area (Photo 13a). The labels on these twelve containers identified the contents as flammable liquids (D001 Waste).</p> <p>The labels on eight of the twelve 5-gallon containers stored in the Bunker Area were not clearly visible for inspection, without physically moving each of the containers (Photo 13a). The ASDs were written on each container and appeared to be stored in the Bunker for less than 90-days (Photos 13b and 13c).</p> <p>Apple does manage this area as a less than 90-day hazardous waste accumulation area. At the time of EPA’s inspection, an Apple employee was actively working in the Bunker Area, but did not appear to be filling or emptying the containers.</p>	 <p>Photo 13a (IMG_5594.JPG)</p>  <p>Photo 13b (IMG_5598.JPG)</p>	<p><u>Potential Violation #13 (Jan 2024):</u> EPA observed twelve closed 5-gallon containers of flammable liquids (D001 Waste) in Apple’s Bunker Area. Eight of the twelve container labels were not clearly visible for inspection.</p> <p>This waste all appeared to be RCRA regulated hazardous waste.</p> <p>Sections <a href="#">§§ 66262.34(a)(1)(A) and 66262.34(f)(1)</a> of Title 22 of the CCR states that generators who accumulate hazardous waste on site without a permit or grant of interim status shall comply with the following:</p> <ol style="list-style-type: none"><li>(1) The date upon which each period of accumulation begins shall be clearly marked and visible for inspection on each container and portable tank <a href="#">[40 CFR § 262.17(a)(5)(A) – (5)(C)]</a>.</li></ol> <p><b>This potential violation is still outstanding.</b></p>

The Bunker Area is located downstream from Apple's initial waste generation activities. Apple's 5-gallon solvent waste containers are not tested at the point of origination but managed as ignitable waste (D001 Waste) once transferred to the Bunker Area for long-term storage.



Photo 13c (IMG\_5600.JPG)

## AREAS OF CONCERN

### Apple's CAA (The Bunker Area)

- Apple's Bunker Area appears to be too small to handle the volume and frequency of hazardous waste containers being generated onsite. EPA recommends that Apple expand the area currently being used to accumulate hazardous waste in the CAA long-term – **Corrected by 01/16/24.**
- Some of Apple's hazardous waste containers that enter the less than 90-day Bunker Area for long-term storage, are not properly labeled or dated prior to being stored in the facility's CAA – **Corrected by 02/23/24.**
- All hazardous waste containers that are stored in Apple's less than 90-day Bunker Area shall have labels that are clearly visible for inspection without having to physically move the containers.

### Apple's B(4) Area

- EPA observed red SAA containers (Step Cans) in Apple's B(4) Area, inside and outside Room 1025. The containers were marked as having as its contents, "Wipes and or PPE contaminated with IPA, Acetone, Ethanol and Butylacetate." According to Apple, this waste description for the facility's solid waste stream is incorrect and they will remove the words "Ethanol" and "Butylacetate" from the waste description but continue to manage the contents as RCRA regulated hazardous waste – **Corrected by 02/23/24.**

### Apple's B(4) Area

EPA observed a red SAA container (Step Can) in Apple's B(4) Area (Room 1021). The container was marked as having as its contents, "Wipes and or PPE contaminated with IPA, Acetone, Ethanol and Butylacetate." According to Apple, this waste description for the facility's solid waste stream is incorrect and they will remove the words "Ethanol" and "Butylacetate" from the waste description but continue to manage the contents as RCRA regulated hazardous waste – **Corrected by 02/23/24.**

### Chemical Pass-Through Area

- EPA observed red SAA containers (Step Cans) in Apple’s Chemical Pass-Through Area. The containers were marked as having as its contents, “Wipes and or PPE contaminated with IPA, Acetone, Ethanol and Butylacetate.” According to Apple, this waste description for the facility’s solid waste stream is incorrect and they will remove the words “Ethanol” and “Butylacetate” from the waste description but continue to manage the contents as RCRA regulated hazardous waste – **Corrected by 02/23/24.**

**Apple’s (B)(4) (B)(4) 2 Area**

- EPA observed a red SAA container (Step Can) in Apple’s (B)(4) (B)(4) 2 Area. The container was marked as having as its contents, “Wipes and or PPE contaminated with IPA, Acetone, Ethanol and Butylacetate.” According to Apple, this waste description for the facility’s solid waste stream is incorrect and they will remove the words “Ethanol” and “Butylacetate” from the waste description but continue to manage the contents as RCRA regulated hazardous waste – **Corrected by 02/23/24.**

**Apple’s (B)(4) / (B)(4) Area**

- EPA observed a red SAA container (Step Can) in Apple’s (B)(4) Area. The container was marked as having as its contents, “Wipes and or PPE contaminated with IPA, Acetone, Ethanol and Butylacetate.” According to Apple, this waste description for the facility’s solid waste stream is incorrect and they will remove the words “Ethanol” and “Butylacetate” from the waste description but continue to manage the contents as RCRA regulated hazardous waste – **Corrected by 02/23/24.**

**Apple’s (B)(4) / (B)(4) Area**

- EPA observed a red SAA container (Step Can) in Apple’s (B)(4) Area. The container was marked as having as its contents, “Wipes and or PPE contaminated with IPA, Acetone, Ethanol and Butylacetate.” According to Apple, this waste description for the facility’s solid waste stream is incorrect and they will remove the words “Ethanol” and “Butylacetate” from the waste description but continue to manage the contents as RCRA regulated hazardous waste – **Corrected by 02/23/24.**
- EPA observed that the sign posted on Solvent Tool 8-113 ( (B)(4) ) in Apple’s (B)(4) / (B)(4) Area needs to be updated to remove the chemical “ (B)(4) ” from the posted sign, which according to Apple is no longer being used in the facility’s semiconductor process.

**Records Review**

Record(s)	Year(s)	Observation(s) and Potential Violations
Manifests:	2020 - 2023	<u>Potential Violation #14:</u> According to Apple’s records, the facility shipped 83 shipments of waste designated as “Water with Solvents” (CA-133 Waste) to the World Oil Recycling facility located at 2000

		<p>N. Alameda St in Compton, CA (EPA ID No. CAT 080 013 352) between 06/29/22 and 12/08/22. This waste was being sent off for the purposes of disposal and appears to have been improperly characterized as NRHW liquid by Apple. The waste actually appears to be an ignitable waste (D001 Waste) under RCRA (See Potential Violation #6).</p> <p>Apple also shipped approximately 145 shipments of waste designated as “Water with Solvents” (CA-133 Waste) to the World Oil Recycling facility in Compton, CA between 01/05/23 and 12/22/23. This waste was being sent off for the purposes of disposal and appears to have been improperly characterized as NRHW liquid by Apple. The waste appears to be an ignitable waste (D001 Waste) under RCRA (See Potential Violation #6).</p> <p>Because Apple appears to have improperly characterized this waste stream, the facility did not include the proper federal waste codes on the manifest that best describes the waste being shipped off-site, a potential violation under RCRA.</p> <p>Section <a href="#">§ 66262.23(a)(1)</a> of Title 22 of the CCR requires the generator of any hazardous or extremely hazardous waste to be transported off-site or into California shall complete the generator and waste section and sign the manifest certification according to the Uniform Hazardous Waste Manifest, EPA Form 8700-22 and EPA Form 870-2A)and instructions <a href="#">[40 CFR § 262.20(a)(1)]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
LDR Forms:	2020 - 2023	<p><b>Potential Violation #15:</b> According to Apple’s records, the facility shipped 83 shipments of waste designated as “Water with Solvents” (CA-133 Waste) to the World Oil Recycling facility located at 2000 N. Alameda St in Compton, CA (EPA ID No. CAT 080 013 352) between 06/29/22 and</p>

		<p>12/08/22. This waste was being sent off for the purposes of disposal and appears to have been improperly characterized as NRHW liquid by Apple. The waste actually appears to be an ignitable waste (D001 Waste) under RCRA (See Potential Violation #6).</p> <p>Apple also shipped approximately 145 shipments of waste designated as "Water with Solvents" (CA-133 Waste) to the World Oil Recycling facility in Compton, CA between 01/05/23 and 12/22/23. This waste was being sent off for the purposes of disposal and appears to have been improperly characterized as NRHW liquid by Apple. The waste actually appears to be an ignitable waste (D001 Waste) under RCRA (See Potential Violation #6).</p> <p>Failure to properly characterize this waste may have resulted in the improper treatment and disposal of this waste stream under the Land Disposal Restriction (LDR) requirements of RCRA.</p> <p>Prior to World Oil Recycling's May 5, 2022 Waste Profile Sheet was created for Apple's "Water and Solvents" waste (Attachment G), Apple was managing its spent solvent waste as both an ignitable waste and as a F-Listed waste stream (D001 and F003 Waste - Attachment Q). Under RCRA, the improper characterization and disposal of a hazardous waste are strictly prohibited.</p> <p>As such, because Apple was venting the VOCs from its spent solvent tank, through the "Activated Carbon" canister, then the "Activated Carbon" generated prior to May 5, 2022, should also have been managed as an F-Listed waste stream. Apple does not appear to have managed its "Activated Carbon" as a hazardous waste, prior to May 5, 2022.</p>
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		<p>Apple shipped at least 3 manifests of improperly characterized “Activated Carbon” waste (Attachment R) off-site as NRHW. Failure to properly characterize this waste may have resulted in the improper treatment and disposal of this waste stream under the Land Disposal Restriction (LDR) requirements of RCRA.</p> <p>Specifically, the facility shipped RCRA regulated waste (D001 and F003 waste) off as NRHW on 12/14/20 (Manifest 014565900 FLE), 11/05/21 (Manifest 015769563 FLE) and 02/02/22 (Manifest - 15769825 FLE).</p> <p>Section <a href="#">§ 66268.7</a> of Title 22 of the CCR requires a generator of hazardous waste to determine if the waste has to be treated to meet applicable treatment standards before it can be land disposed <a href="#">[40 CFR § 268.7]</a>.</p> <p><b>These potential violations are still outstanding.</b></p>
Biennial Reports:	2019 and 2021	Reviewed.
Exception Reports:	2020 - 2023	Not Reviewed.
Weekly Inspections:	2023	<p><u>Potential Violation #16:</u> LQGs are required to conduct weekly inspections of their CAAs as well as document that those weekly inspections were conducted, under RCRA. Apple does not appear to have either performed weekly inspections or maintained records documenting that the weekly inspections were performed in 2023.</p> <p>Apple is missing 15 weekly inspection logs for calendar year 2023. Specifically, the facility is missing inspection logs for the weeks of <b>02/20/23, 05/19/23, 05/26/23, 06/02/23, 06/09/23, 06/16/23, 06/23/23, 06/30/23, 07/07/23, 07/14/23, 07/21/23, 07/28/23, 08/04/23, 08/11/23, and 08/18/23.</b></p> <p>Section <a href="#">§ 66265.174</a> of Title 22 of the CCR states that the owner or operator shall</p>

		<p>inspect areas used for container storage or transfer, at least weekly, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors <a href="#">[40 CFR § 262.17(a)(1)(v)]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
<p>Subpart BB Monitoring Equipment Calibrations:</p>	<p>2020 - 2023</p>	<p><u>Potential Violation #17</u>: EPA reviewed Apple’s Field Service Reports, monitoring data and the facility’s Subparts BB and CC Emissions Monitoring Procedures. Based on EPA’s review, Apple did not properly calibrate its Eagle 2 Multigas Detector with PID sensor, a total of 34 times [34 Times = 4 Times (2020) + 12 Times (2021) + 12 Times (2022) + 7 Times (2023)] between 2020 and 2023.</p> <p>Between 09/01/20 and 07/31/23, Apple only calibrated its Multigas Detector on one occasion (i.e., 11/24/20) before use, on the same day of use, when monitoring for VOC emissions onsite. Specifically, Apple documented that it calibrated the RKI Eagle 2 Multigas Detector with PID Sensor on 06/25/19, 11/25/19, 07/08/20, 11/24/20, 06/17/21, 07/5/22, 01/12/23, and 06/20/23. The only calibration day that matches the days of monitoring between 09/01/20 and 07/31/23 is the calibration performed on 11/24/20. Failure to calibrate a monitoring device before use, on the same day of use is a potential violation under RCRA.</p> <p>Section <a href="#">§ 66265.1063(b)(3)</a> of Title 22 of the CCR states that leak detection monitoring, as required in Sections 66265.1052 through 66263.1062, shall comply with following requirements:</p> <ol style="list-style-type: none"> <li>(1) Monitoring shall comply with Reference Method 21 in 40 CFR, part 60, incorporated by reference in Section 66260.11 of this chapter.</li> <li>(2) The detection instrument shall meet the performance criteria of Reference Method 21.</li> </ol>

		<p>(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.</p> <p>(4) Calibration gases shall be:</p> <p>(A) Zero air (less than 10 ppm of hydrocarbon in air);</p> <p>(B) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane <a href="#">[40 CFR § 265.1063(b)(3)]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
Subpart BB Monitoring Records:	2020 - 2023	Reviewed.
Daily Tank Inspections:	2023	<p><b>Potential Violation #18:</b> EPA reviewed the 2023 daily tank inspection records for Apple’s 1,700-gallon solvent waste tank. Based on the documents submitted, the facility doesn’t appear to have performed daily inspections of Apple’s 1,700-gallon spent solvent tank every day that RCRA hazardous waste (D001 Waste) was stored in the tank. Between 01/01/23 and 08/18/23, Apple appears not to have performed daily inspections 48 times over the weekend in 2023.</p> <p>Specifically, the facility is missing daily inspection records for <b>01/07/23, 01/08/23, 01/14/23, 01/15/23, 01/21/23, 01/22/23, 02/04/23, 02/05/23, 02/25/23, 02/26/23, 03/04/23, 03/05/23, 03/11/23, 03/12/23, 03/18/23, 03/19/23, 04/01/23, 04/02/23, 04/08/23, 04/09/23, 04/15/23, 04/16/23, 04/22/23, 04/23/23, 04/29/23, 04/30/23, 05/13/23, 05/14/23, 05/27/23, 05/28/23, 06/03/23, 06/04/23, 06/10/23, 06/11/23, 06/17/23, 06/18/23, 06/24/23, 06/25/23, 07/01/23, 07/02/23, 07/08/23, 07/09/23, 07/22/23/ 07/23/23, 07/29/23, 07/30/23, 08/12/23, and 08/13/23.</b></p> <p>After the inspection, EPA determined that Apple’s solvent waste tank should have been regulated as a hazardous waste unit and the solvents regulated as an ignitable</p>

		<p>waste (D001 Waste) in 2023 (See Potential Violation #6). Under RCRA, daily inspections are required to be performed on hazardous waste tanks subject to the Subpart J requirements, anytime a RCRA hazardous waste is being accumulated in a RCRA hazardous waste tank, including weekends and holidays.</p> <p>Section <a href="#">§ 66265.195(a)</a> of Title 22 of the CCR states that the owner or operator shall inspect, where present, at least once each operating day <a href="#">[40 CFR § 265.195(a)]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
<p>Subpart CC Applicability:</p> <ul style="list-style-type: none"> <li>- Spent Solvent Waste Tank (1,700-gallons)</li> <li>- Solvent Waste Lift Station (67-gallons)</li> </ul>	<p>2020 - 2023</p>	<p><u>Potential Violation #19</u>: After EPA’s inspection, it was determined that the source of the spent solvent waste entering Apple’s 1,700-gallon solvent waste tank is characteristic for ignitability and should be, at a minimum, be managed as a D001 hazardous waste stream at the point of origination.</p> <p>As such, Apple failed to properly evaluate the facility’s spent solvent waste tank (SW-TNK-2) and the solvent waste lift station (SW-LS) to determine if the hazardous waste management units are subject to the RCRA air emission standards under RCRA.</p> <p>Section <a href="#">§ 66265.1083(b)</a> of Title 22 of the CCR states that the owner or operator shall control air pollutant emissions from each hazardous waste management unit in accordance with standards specified in sections 66265.1085 through 66265.1088 as applicable to the hazardous waste management unit, except as provided for in subsection (c) of this section <a href="#">[40 CFR § 265.1083(b)]</a>.</p> <p><b>This potential violation is still outstanding.</b></p>
<p>Employee Training Records:</p> <ul style="list-style-type: none"> <li>- Allan Sherlock</li> <li>- Demonte Rose</li> <li>- Sameei Al Khafaji</li> </ul>	<p>2021 - 2023</p>	<p>Reviewed.</p>

Consolidated Emergency Response/Contingency Plan:	01/21/22	Reviewed.
Spill Reports:	2020 - 2023	Not Applicable.
San Jose-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit: - Permit No. SC-461B	11/20/20 – 11/19/25	Reviewed.
Bay Area Air Quality Management District – Permit to Operate: - Air Permit No. 22839	05/06/23 – 05/01/24	Reviewed.

### Closing Conference

On August 17, 2023, August 18, 2023 and January 16, 2024, Apple’s representatives participated in Closing Conferences with EPA Region 9. The EPA inspectors reviewed the inspection activities and summarized some potential violations and areas of concern.

Inspector Rollins gave an estimated date as to when Apple might receive the final RCRA hazardous waste inspection report. EPA thanked the facility for its hospitality and full cooperation. The overall inspection was concluded on January 16, 2024 at 4:50 pm.

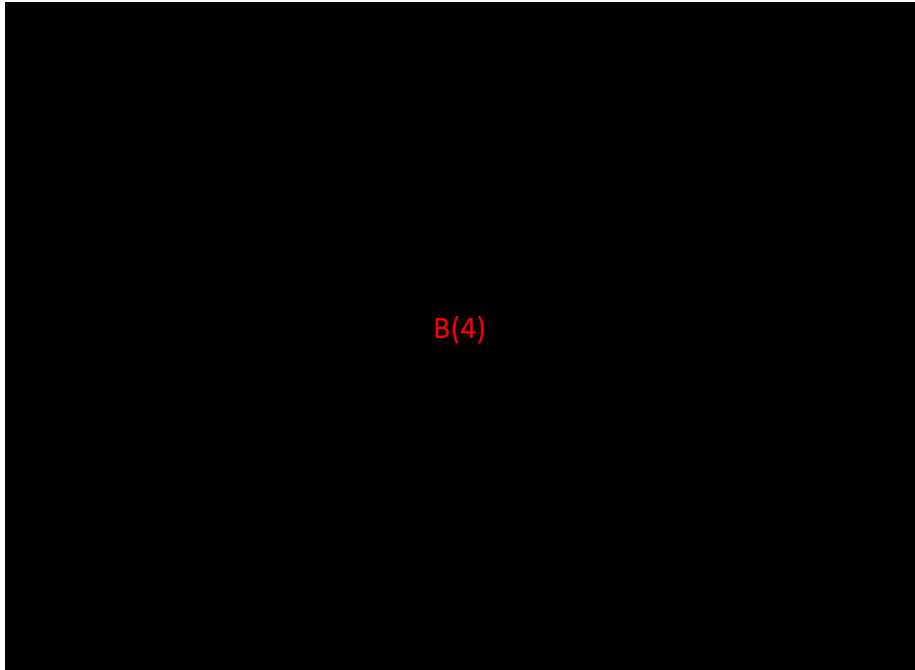
### SECTION III – LIST OF ATTACHMENTS

- Attachment A - Apple Photograph Log
- Attachment B - SB01 Air Permit 22839
- Attachment C - SB01 Industrial Wastewater Permit
- Attachment D - Tiered Permitting Unit – AWN System
- Attachment E - Tiered Permitting Unit – HMR System
- Attachment F - Tiered Permitting Unit – Solvent Tank System
- Attachment G - SB01 Water with Solvents Profile
- Attachment H - Permit Modification Application\_ Plant 22839
- Attachment I - (B(4)) SDS
- Attachment J - (B(4)) SDS
- Attachment K - (B(4)) SDS
- Attachment L - IPA SDS
- Attachment M - (B(4)) (B(4)) SDS
- Attachment N - (B(4)) UHP SDS
- Attachment O - (B(4)) SDS
- Attachment P - (B(4)) ( (B(4)) ) SDS
- Attachment Q - CH1505500 Mixed Flam Liquid SB01
- Attachment R - Improperly Characterized Activated Carbon Shipments

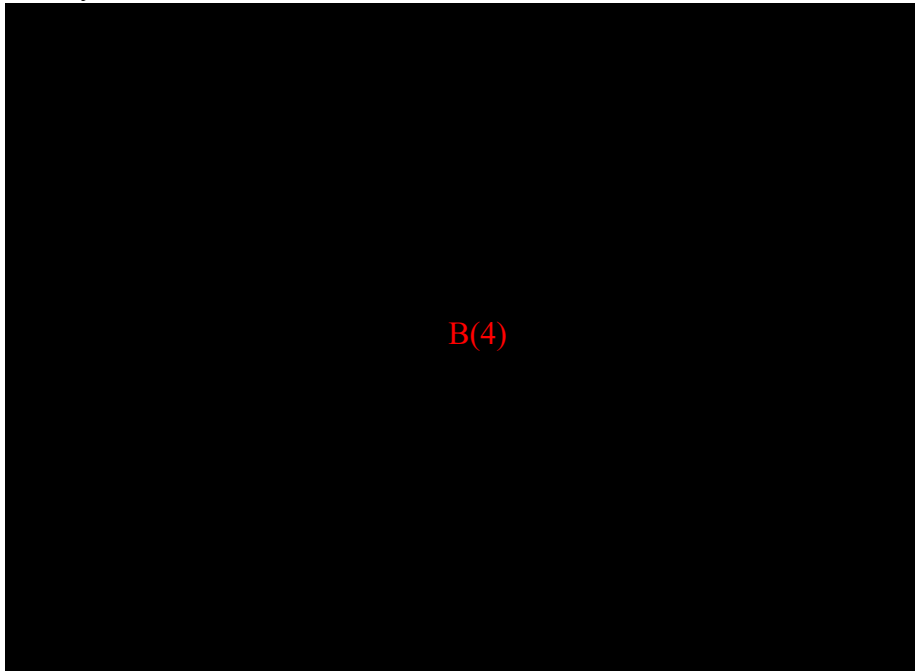
**Region 9 Enforcement and Compliance Assurance Division**

**RCRA INSPECTION REPORT PHOTOGRAPH LOG**

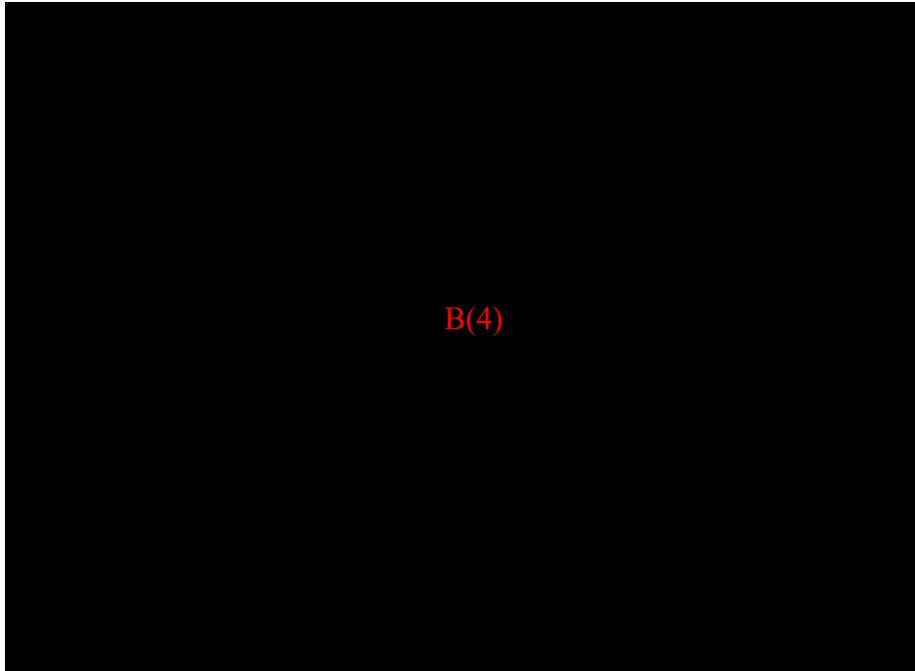
Apple, Inc. – 08/17/2023, 08/18/2023 and 01/16/2024



**Photograph 1a (P8170006.JPG - 08/17/23):** A photo of nineteen 5-gallon containers of corrosive waste in Apple's Building 1 East, Compartment 1 Indoor CAA Shed (The Bunker Area). Two containers were unlabeled and undated, eleven of the container labels were not clearly visible, and one container was stored on-site for more than 90-days.



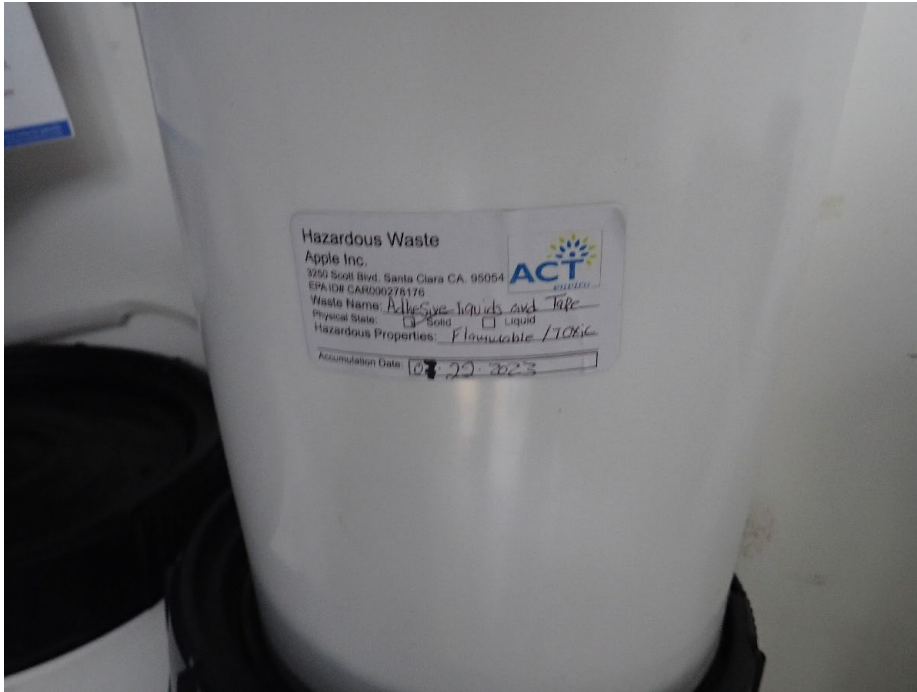
**Photograph 1b (P8180009.JPG - 08/18/23):** A photo of the two unlabeled and undated containers with new RCRA hazardous waste labels placed on them. The Accumulation State Dates (ASDs) on the containers were dated 08/17/23.



**Photograph 1c (P8180010.JPG - 08/18/23):** A close-up photo of a 5-gallon container of corrosive liquids in Apple’s Bunker. The container was marked “**B(4)**” and the ASD on the container was 03/02/23. The correct name was later determined to be “**B(4)**.”



**Photograph 2a (P8170013.JPG - 08/17/23):** A photo of an open 5-gallon container of “Adhesive Liquids and Tape” waste in Apple’s Bunker Area. The lid of the container was not secured, and the waste was being managed as non-RCRA hazardous waste.



**Photograph 2b (P8170014.JPG - 08/17/23):** A close-up photo of the hazardous waste label on the 5-gallon container of “Adhesive Liquids and Tape” waste in Apple’s Bunker Area. The ASD on the label was documented as 07/22/23.



**Photograph 2c (P8180013.JPG - 08/18/23):** A close-up photo of the closed 5-gallon container of “Adhesive Liquids and Tape” waste in Apple’s Bunker Area. The container was closed on 08/18/23.





**Photograph 3a (P8170015.JPG - 08/17/23):** A photo of a 5-gallon container of “Silicone” waste in Apple’s Bunker Area. The container was closed but had an ASD of 03/16/22, more than 90-days from the date of EPA’s inspection. This waste was regulated as a non-RCRA hazardous waste.



**Photograph 4a (P8170016.JPG - 08/17/23):** A photo of several containers of expired chemicals on the floor of Apple’s Bunker Area. According to the facility representative, the containers were placed in the Bunker Area that morning and hadn’t been properly labeled with a hazardous waste label or dated, prior to EPA’s arrival.



**Photograph 5a (P8170020.JPG - 08/17/23):** A photo of an open 55-gallon container of “Mega Posit” in Apple’s Bunker Area. At the time of the inspection, the cap was laying on top of the opening of the container (not as depicted here). According to Apple, the container was left opened in order to prevent the container from expanding and bulging.



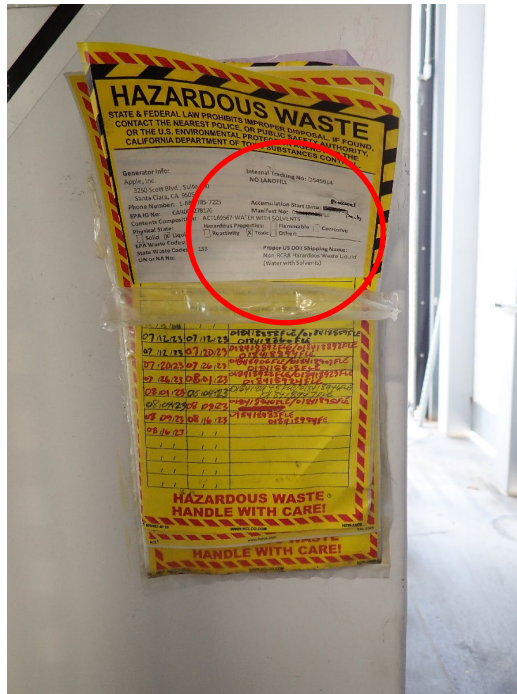
**Photograph 5b (P8170021.JPG - 08/17/23):** A close-up photo of the label on the open 55-gallon container of “Mega Posit” waste in Apple’s Bunker Area. The label was starting to peel off of the container while inside the Bunker Area.



**Photograph 5c (P8180012.JPG - 08/18/23):** A photo of the cap placed back on the container, officially closing the container. This container was documented as closed on 08/18/23.



**Photograph 6a (P8170051.JPG - 08/17/23):** A photo of Apple’s 1,700-gallon stainless-steel hazardous waste tank. The tank was marked with the words, “Hazardous Waste” and used for the accumulation of spent solvent waste. At the time of the inspection, the solvents were being managed as California Only Waste.



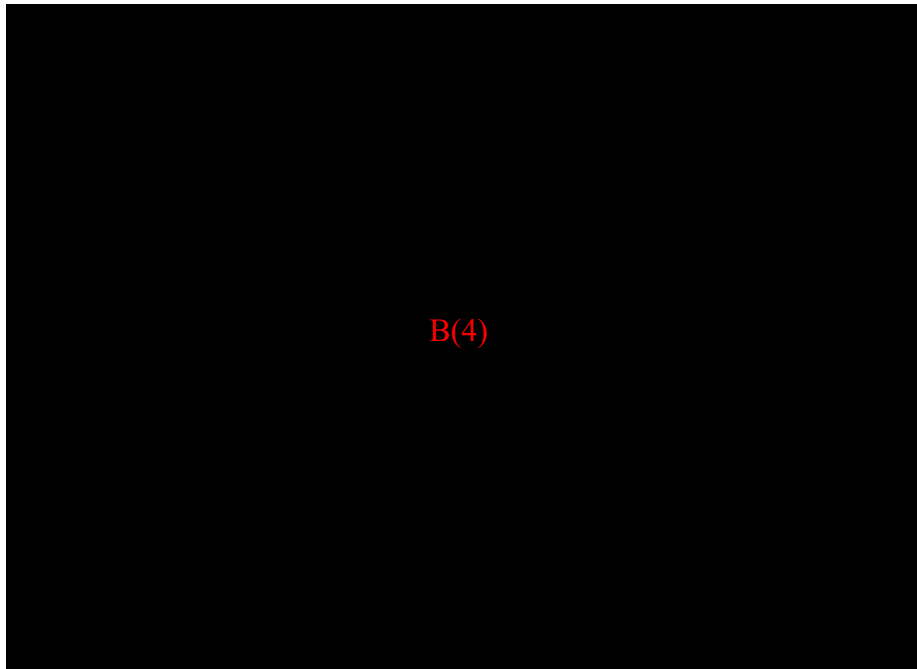
**Photograph 6b (P8170052.JPG - 08/17/23):** A photo of The hazardous waste label on the 1,700-gallon solvent waste tank in the Bunker Area. At the time of the inspection, the waste was marked as “Water with Solvents” and managed as California Only Waste.



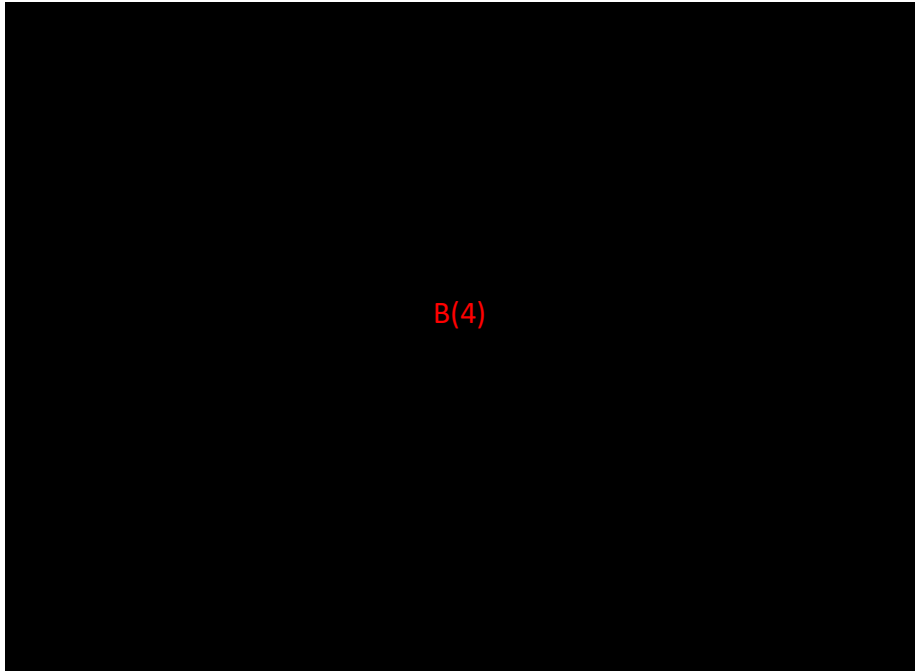
**Photograph 7a (P8170062.JPG - 08/17/23):** A photo of a 55-gallon container filled with “Activated Carbon” and located on the roof of Building 1. This drum is used to capture the VOC emissions from Apple’s 1,700-gallon spent solvent waste tank. The container was not labeled or identified in Apple’s air permit or their RCRA tank assessment.



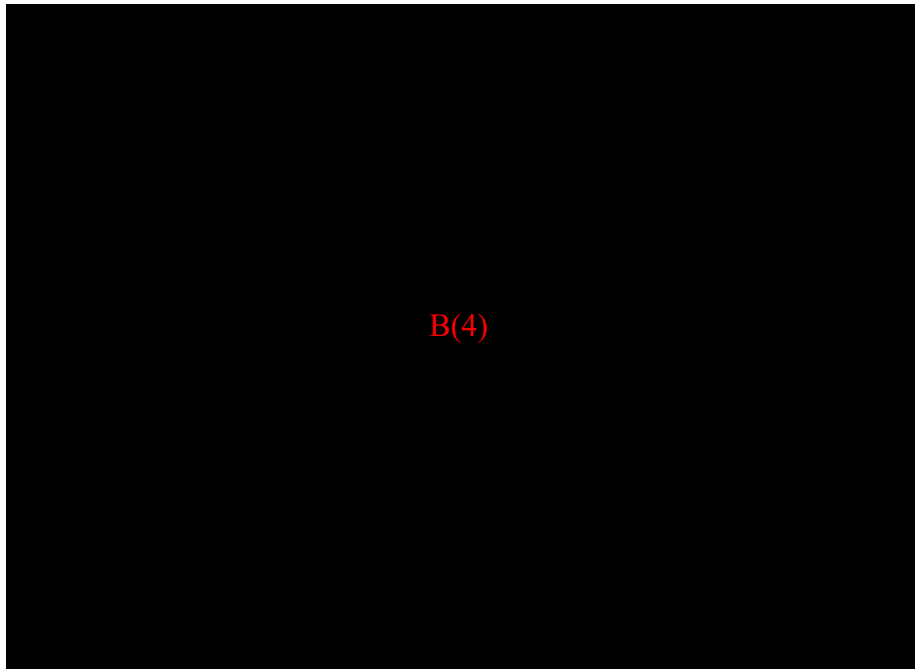
**Photograph 7b (P8170061.JPG - 08/17/23):** A photo of three vents connected to Apple’s 55-gallon container filled with “Activated Carbon”. The two vents on the left are emergency vents for the double-walled tank. The vent on the right is the main vent.



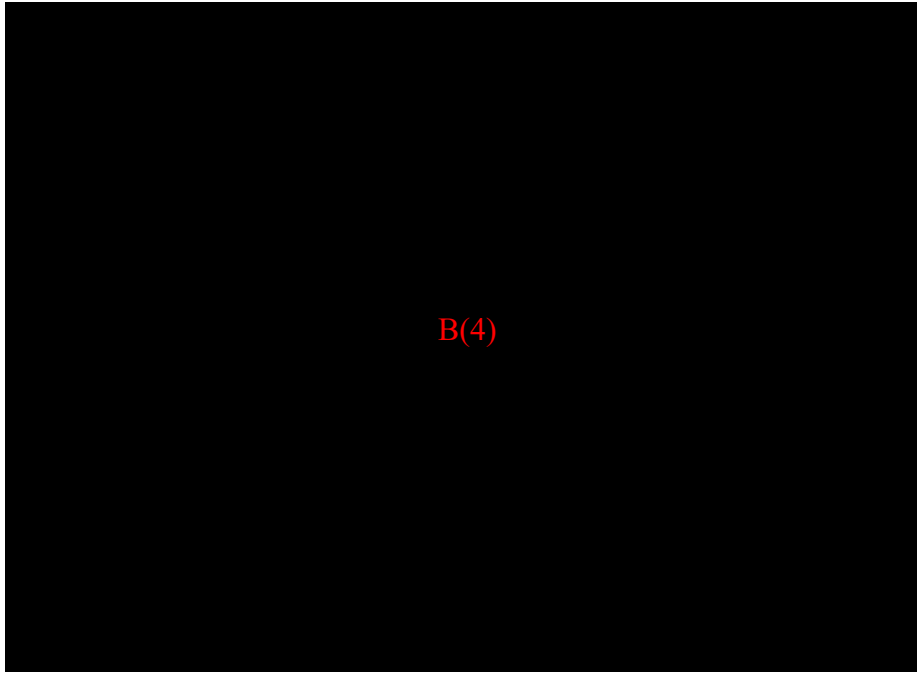
**Photograph 8a (IMG\_5542.JPG - 01/16/24):** A photo of Tool 8-01C in [REDACTED] - [REDACTED] of Apple’s [REDACTED] Area. The tool utilizes three chemicals that once spent are managed as a flammable waste (D001 Waste) onsite.



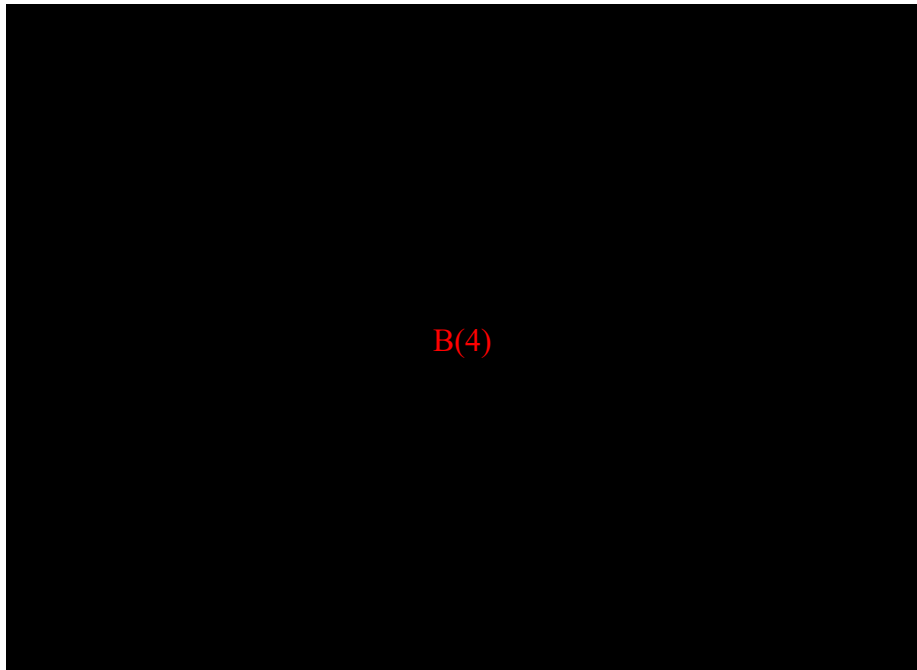
**Photograph 9a (IMG\_5554.JPG - 01/16/24):** A close-up photo of the two chemicals that are used in Tool 8-112 located in [REDACTED] – [REDACTED] Area. The label identifies that there is one solvent and one corrosive chemical being used in this tool when in operation.



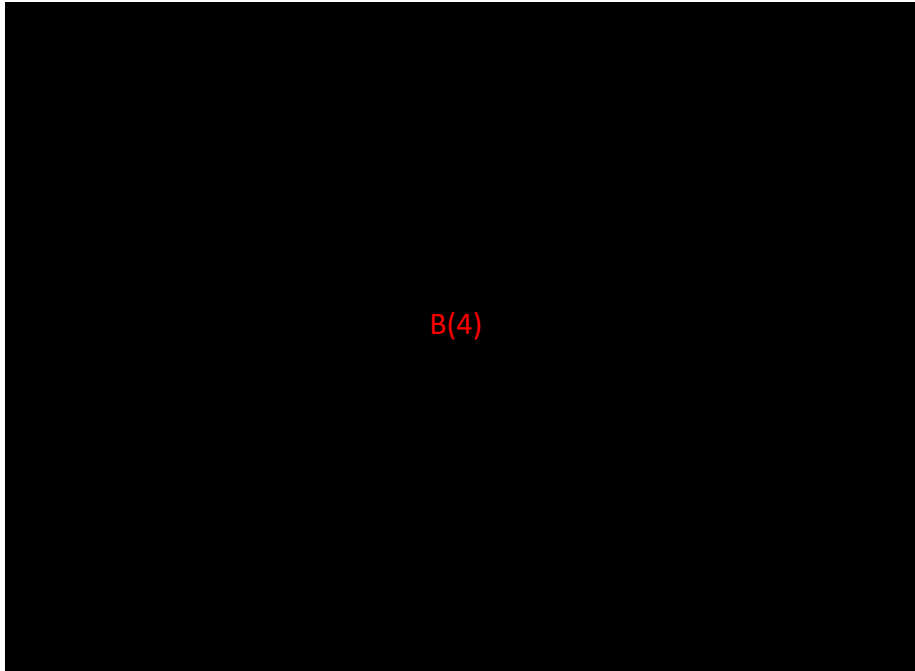
**Photograph 9b (IMG\_5555.JPG - 01/16/24):** A photo of the solvent and water baths inside of Tool 8-112 located in [REDACTED] – [REDACTED] Area.



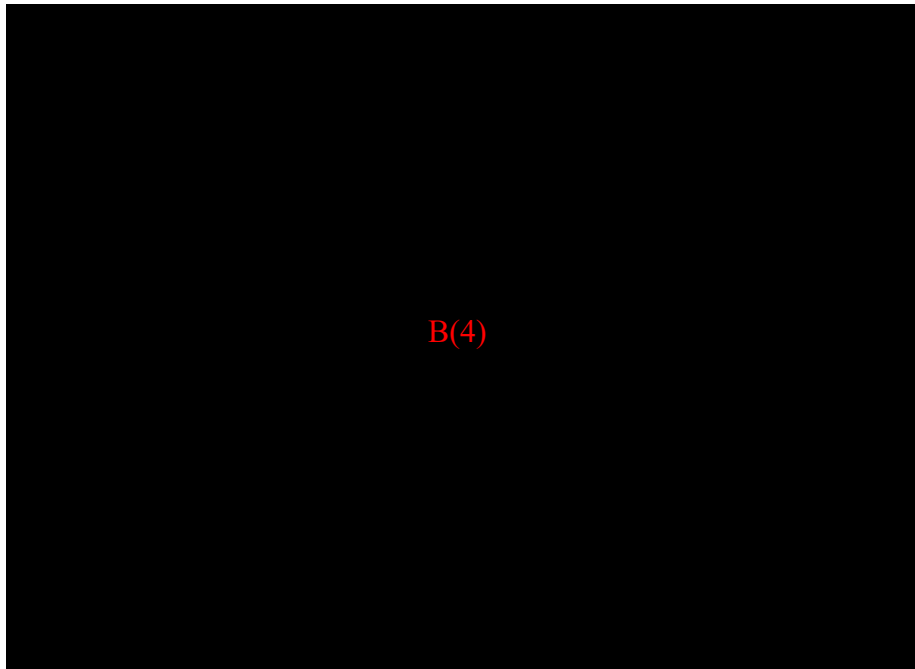
**Photograph 9c (IMG\_5556.JPG - 01/16/24):** A close-up photo of the three chemicals that are used in Tool 6-51 located in [REDACTED] – [REDACTED] Area. The label identifies that there are two solvents and one corrosive chemical being used in this tool when in operation.



**Photograph 9d (IMG\_5557.JPG - 01/16/24):** A photo of the solvent and water baths inside Tool 6-15 located in [REDACTED] – [REDACTED] Area.

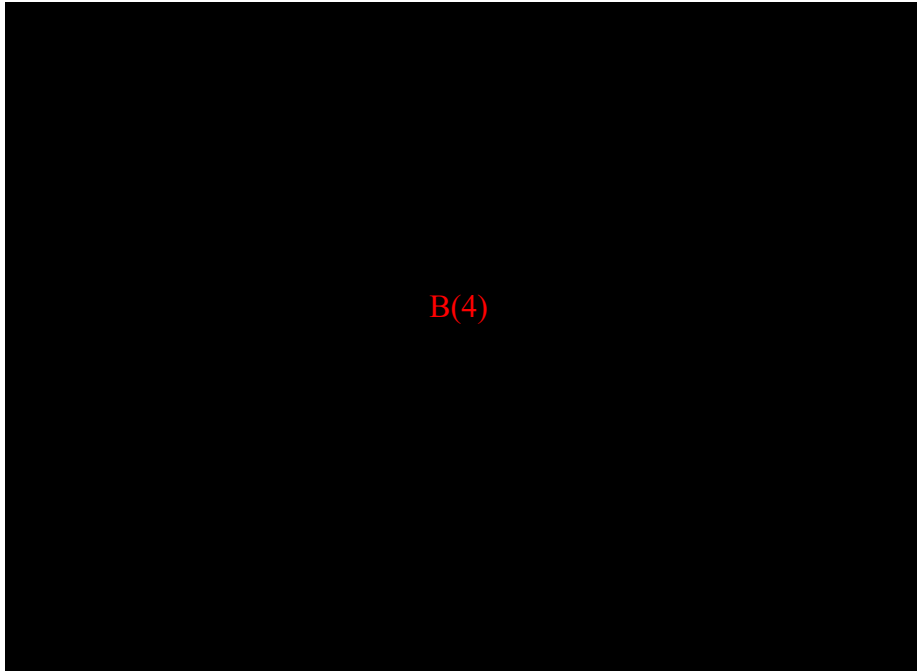


**Photograph 10a (IMG\_5565.JPG - 01/16/24):** A close-up photo of the four chemicals that are used in Tool 8-133 located in the B(4) Area. The label identifies that there are two solvents and two corrosive chemicals being used in this tool when in operation.

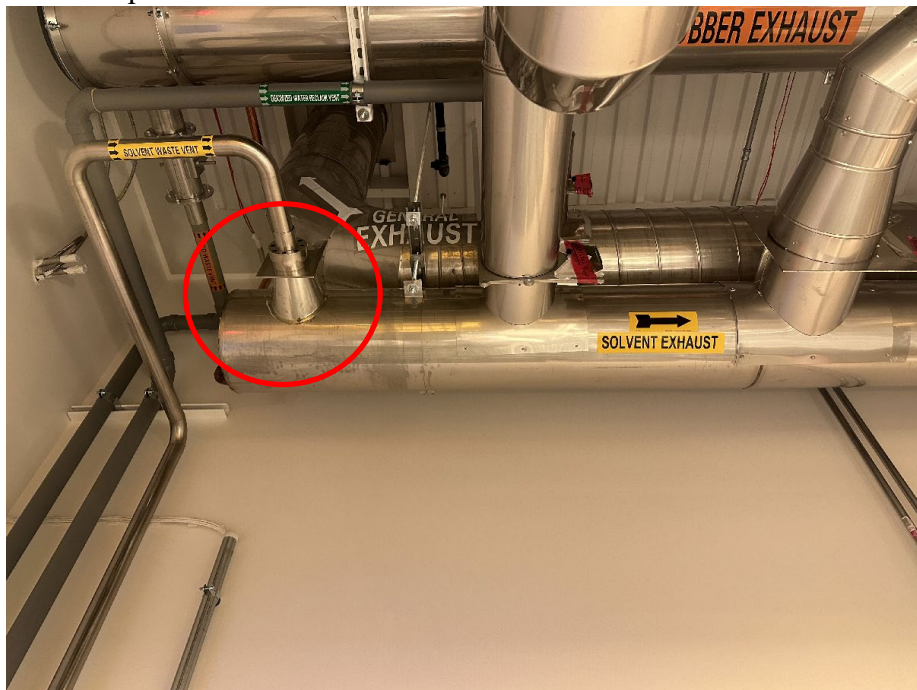


**Photograph 10b (IMG\_5567.JPG - 01/16/24):** A close-up photo of two chemicals posted on a sign near Tool 8-134 located in the B(4) Area. The label identifies that there are two solvent chemicals being used in this tool when in operation.





**Photograph 10c (IMG\_5568.JPG - 01/16/24):** A close-up photo of three chemicals posted on a sign near the 8-29 [REDACTED] located in the [REDACTED] Area. The label identifies that there is one solvent and two corrosive chemicals being used in this tool when in operation.



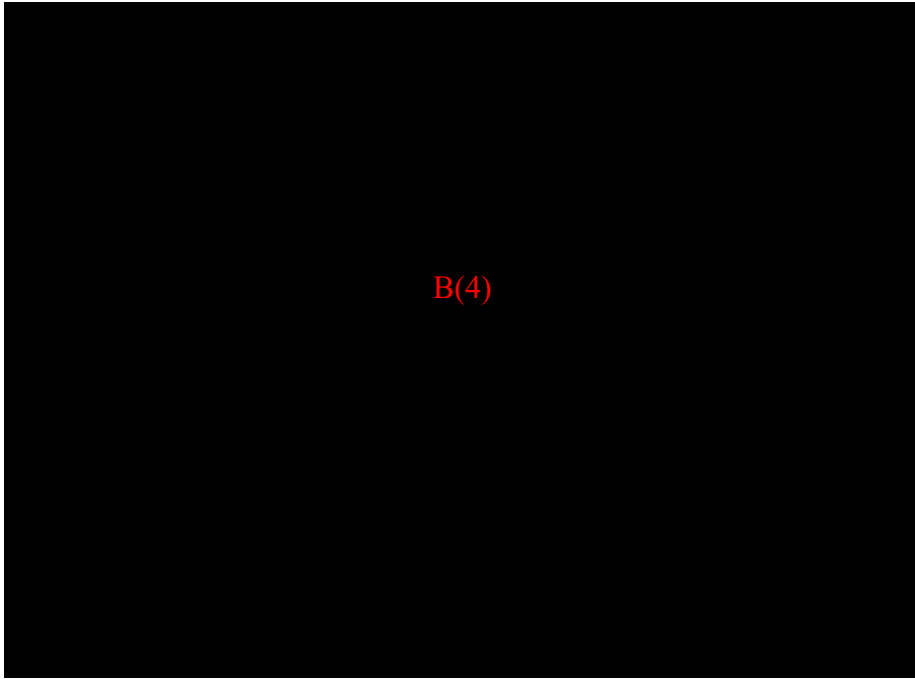
**Photograph 11a (IMG\_5548.JPG - 01/16/24):** A photo of Apple's solvent waste vent in the [REDACTED] [REDACTED] Area of the facility's [REDACTED] Area connecting to Apple's solvent exhaust piping system. The solvent waste vent connects to piping on each of the 5-gallon carboy containers located in the grated floor in the room.



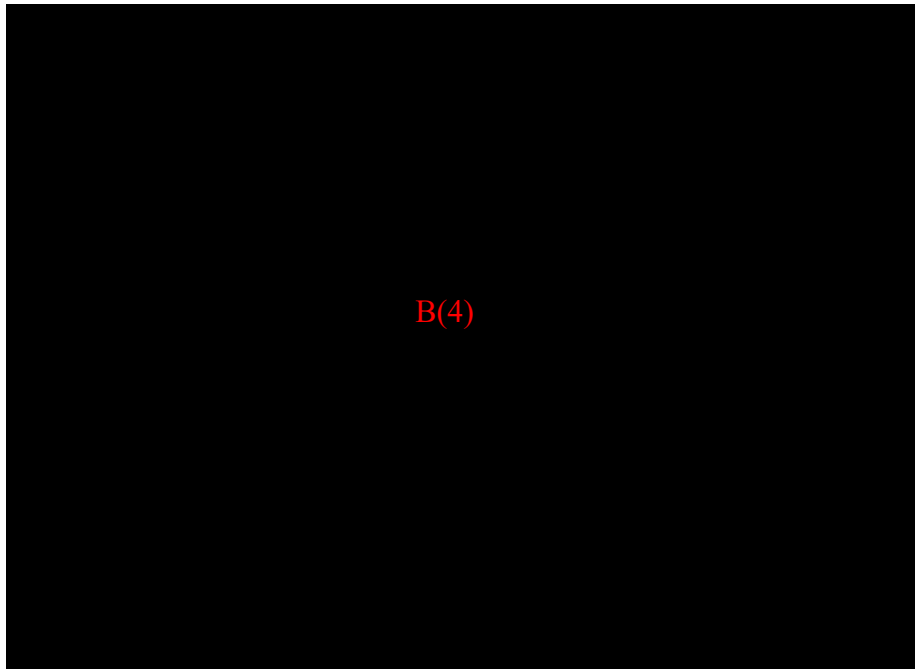
**Photograph 11b (IMG\_5589.JPG - 01/16/24):** A photo of Apple's solvent exhaust system on the right ( **B(4)** ) emerging from the ceiling in the **B(4)** Area and connecting to the larger exhaust system piping on the roof. The "Activated Carbon" box for **B(4)** is located on the left side of the photo, which is used to vent VOCs.



**Photograph 11c (IMG\_5591.JPG - 01/16/24):** A photo of Apple's solvent exhaust piping connecting to one of the main general exhaust systems on the roof of Building 1. The general exhaust system vents the air directly to the atmosphere.



**Photograph 12a (IMG\_5592.JPG - 01/16/24):** A photo of eleven 5-gallon containers of corrosive waste (D002 Waste) in Apple’s Bunker Area. The labels on three of the eleven 5-gallon containers were not clearly visible for inspection, without physically moving each of the containers.



**Photograph 12b (IMG\_5603.JPG - 01/16/24):** A close-up photo of Apple’s 5-gallon container of “B(4)” waste. This waste is managed as a corrosive waste (D002 Waste) and has an accumulation start date of 01/09/24.



**Photograph 13a (IMG\_5594.JPG - 01/16/24):** A photo of twelve 5-gallon containers of mixed solvent waste in Apple's Bunker Area. The labels on eight of the twelve containers were not clearly visible during the inspection. The waste from these containers were accumulated upstream in Apple's **B(4)** Area.



**Photograph 13b (IMG\_5598.JPG - 01/16/24):** A photo of one 5-gallon container of mixed solvents in Apple's Bunker Area. The container is marked as a flammable waste (D001 Waste) and has an accumulation state date of 01/16/24.



**Photograph 13c (IMG\_5600.JPG - 01/16/24):** Another photo of a 5-gallon container of mixed solvent waste in Apple’s Bunker Area. The container is marked as a flammable waste (D001 Waste) and has an accumulation state date of 01/11/24.



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**PERMIT EXPIRATION DATE**

**MAY 1, 2024**

PLANT# 22839

Apple, Inc  
3250 Scott Boulevard  
Santa Clara, CA 95054

COPY SENT TO:  
Tom Huynh, EHS Lead  
Apple, Inc  
1 Apple Park Way, M/S 319 5EHS  
Cupertino, CA 95014

Location: 3250 Scott Boulevard  
Santa Clara, CA 95054

S#	DESCRIPTION	[Schedule]	PAID
1	Semiconductor fab Research and Development Facility (Research and Development Facility) Abated by: A2 Packed Bed Scrubber A5 Afterburner A10 Afterburner A11 Scrubber A4 Afterburner A9 Afterburner A3 Afterburner A8 Afterburner A7 Afterburner A6 Afterburner A1 Packed Bed Scrubber Emissions at: P2 Stack P4 Stack P3 Stack P5 Stack P1 Stack	[H]	1722
2	Standby Diesel engine, 2922 hp, EPA# ECEXL060.AAD, Cummins Emergency Standby Diesel Engine Emissions at: P6 Stack	[B]	1519

The operating parameters described above are based on information supplied by permit holder and may differ from the limits set forth in the attached conditions of the Permit to Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of District regulations subject to enforcement action.



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PERMIT EXPIRATION DATE

MAY 1, 2024

PLANT# 22839

S#	DESCRIPTION	[Schedule]	PAID
A10	Direct Flame Afterburner, 1277K BTU/hr max, Multifuel Thermal Processing Unit(TPU)-4C Abated by: A9 Afterburner A8 Afterburner A7 Afterburner A6 Afterburner A1 Packed Bed Scrubber Emissions at: P1 Stack	[exempt]	0
A9	Direct Flame Afterburner, 1277K BTU/hr max, Multifuel Thermal Processing Unit(TPU)-4B Abated by: A8 Afterburner A7 Afterburner A6 Afterburner A1 Packed Bed Scrubber Emissions at: P1 Stack	[exempt]	0
A8	Direct Flame Afterburner, 1277K BTU/hr max, Multifuel Thermal Processing Unit(TPU)-4A Abated by: A7 Afterburner A6 Afterburner A1 Packed Bed Scrubber Emissions at: P1 Stack	[exempt]	0
A7	Direct Flame Afterburner, 1278K BTU/hr max, Multifuel Thermal Processing Unit(TPU)-3B Abated by: A6 Afterburner A1 Packed Bed Scrubber Emissions at: P1 Stack	[exempt]	0
A6	Direct Flame Afterburner, 1277K BTU/hr max, Multifuel Thermal Processing Unit(TPU)-3A Abated by: A1 Packed Bed Scrubber Emissions at: P1 Stack	[exempt]	0

The operating parameters described above are based on information supplied by permit holder and may differ from the limits set forth in the attached conditions of the Permit to Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of District regulations subject to enforcement action.



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**MAY 1, 2024**

PLANT# 22839

S#	DESCRIPTION	[Schedule]	PAID
A5	Direct Flame Afterburner, 1695K BTU/hr max, Multifuel TPU-2A Abated by: A4 Afterburner A3 Afterburner Emissions at: P3 Stack P5 Stack	[exempt]	0
A4	Direct Flame Afterburner, 1695K BTU/hr max, Multifuel Thermal Processing Unit(TPU)-1B Abated by: A3 Afterburner Emissions at: P3 Stack P5 Stack	[exempt]	0
A3	Direct Flame Afterburner, 1695K BTU/hr max, Multifuel Thermal Processing Unit (TPU)-1A Emissions at: P5 Stack	[exempt]	0

2 Permitted Sources, 8 Exempt Sources

\*\*\* See attached Permit Conditions \*\*\*

The operating parameters described above are based on information supplied by permit holder and may differ from the limits set forth in the attached conditions of the Permit to Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of District regulations subject to enforcement action.





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PERMIT EXPIRATION DATE

MAY 1, 2024

PLANT# 22839

\*\*\* PERMIT CONDITIONS \*\*\*

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Source#	Subject to Condition Numbers
-----	-----

1	26031
2	22850

The operating parameters described above are based on information supplied by permit holder and may differ from the limits set forth in the attached conditions of the Permit to Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of District regulations subject to enforcement action.



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**PERMIT EXPIRATION DATE**

**MAY 1, 2024**

PLANT# 22839

\*\*\* PERMIT CONDITIONS \*\*\*

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**COND# 22850** *applies to S# 2*

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal emission limits is not limited.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.



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\*\*\* PERMIT CONDITIONS \*\*\*

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- a. Hours of operation for reliability-related activities (maintenance and testing).
- b. Hours of operation for emission testing to show compliance with emission limits.
- c. Hours of operation (emergency).
- d. For each emergency, the nature of the emergency condition.
- e. Fuel usage for each engine(s).  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

- 5. At School and Near-School Operation:  
If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

- a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
- b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session.

"School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property.

[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]



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**MAY 1, 2024**

PLANT# 22839

\*\*\* PERMIT CONDITIONS \*\*\*

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**COND# 26031** *applies to S# 1*

Plant 22839: Apple located at 3250 Scott Boulevard in Santa Clara, CA 95054  
Application 26855: For S-1 "Research and Development (R&D) Fabrication Area"  
Abated by Scrubbers (A-1, A-2, and A-11) and Thermal Processing Units (A-3, A-4, A-5, A-6, A-7, A-8, A-9, and A-10).

1a. The owner/operator of S-1 "Research and Development (R&D) Fabrication Area" shall not exceed the following gross usage limits at any solvent station during any consecutive twelve-month period:

Solvent Sink Station	
Chemical	Gallons
DuPont EKC 922	240
DuPont EKC 265	240
NMP	720
AZ EBR AZ7030	48
Stripper Dow T1100	24

Solvent Vapor Station	
Chemical	Gallons
Isopropyl Alcohol (IPA)	12
[Basis: Cumulative Increase]	

1b. The owner/operator of (S-1) shall not exceed the following gross usage limits for wipe cleaning within the source during any consecutive twelve-month period:

Wipe Cleaning Operations	
Chemical	Gallons
Acetone	240
50% IPA, 50% Water	240
10% IPA, 90% Water	250
[Basis: Cumulative Increase]	

1c. The owner/operator of (S-1) shall not exceed the following gross usage limits of any photoresist and solvent base developer during any consecutive twelve-month period:  
Photoresist



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Chemical	Gallons
Hexamethyldisilazane (HMDS)	12
n-Resist AZ nl OF 2035	48
n-Resist Fujitsu PFi-89	24
BCB Cyclone 3022-46	24

Solvent Base Developer Chemical	Gallons
TetraMethyl Ammonium hydroxide (TMAH) (Basis: Cumulative Increase)	480

1d. The owner/operator of (S-1) shall not exceed the following gross usage limits of any toxic inorganic liquids and organic/inorganic gases during any consecutive twelve-month period:

Inorganic Liquids Chemical	Gallons
Ammonium Hydroxide (NH4OH)	24
Hydrochloric Acid	144
Sulfuric Acid	1,200
Organic/Inorganic Gases Gases	lb/year
Arsine	78
Phosphine (PH3)	198
Boron Trichloride	1
Ammonia (NH3)	105,600
C4H8 (Octofluorocyclobutane)	1
CHF3 (trifluoromethane)	1
CF4 (tetrafluoromethane)	1
SF6 (sulfurhexafluoride)	1
Silane (SiH4)	19
Hydrogen Chloride (HCl)	1
Hydrogen Bromide (HBr)	1
Chlorine	1
[Basis: Toxics]	

2. The owner/operator may use an alternate coating(s), cleanup solvent(s), organic liquids, and organic/inorganic gases other than the materials specified in Part 1a through 1d and/or materials in excess of those specified in Part 1a through 1d, provided that the owner/operator can demonstrate that all of the following are satisfied:



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- a. Total POC emissions from S-1 do not exceed 1.151 tons in any consecutive twelve month period;
- b. Total NPOC emissions from S-1 do not exceed 0.79 tons in any consecutive twelve month period; and
- c. The use of these materials does not increase toxic emissions above any risk screening trigger level.

For the purposes of emission calculations, 30% of the gross usage at solvent stations shall be assumed to be emitted, 100% of Hexamethyldisilazane (HMDS) and 90% of the remaining photoresist gross usage shall be assumed to be emitted, unless the Air Pollution Control Officer has provided written approval to the owner/operator of this source to use other emission factors. [Basis: Cumulative Increase; Toxics]

1. The owner/operator shall not emit more than 1.15 metric tons of CO2e from the facility wide semiconductor operation in any consecutive 12-month period. To determine CO2e emissions, the owner/operator shall use ARB's semiconductor emission calculator that can be found at the following URL:  
<http://www.arb.ca.gov/cc/semiconductors/calculator/calculator.htm>.  
 [Basis: Title 17, CCR, Sections 95322 and 95323]

2. The owner/operator of a semiconductor operation shall submit a GHG emission report pursuant to the requirements in section 95324(b) to the BAAQMD Compliance and Enforcement Division for every calendar year by March 1 of the following year. This report shall quantify the monthly and annual emissions from the semiconductor operations. If the facility emits less than 800 metric tons/calendar year of CO2e, the facility may report emissions on an annual basis. [Basis: Title 17, CCR, Section 95324]

3. The owner/operator shall ensure S-1 is abated at all times of operation by the properly installed and properly maintained scrubbers (A-1, A-2, and A-11) and Thermal Processing Units (A-3, A-4, A-5, A-



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PLANT# 22839

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6, A-7, A-8, A-9, A-10). The requirement to abate emissions in Part 5 shall not apply to emissions from solvent sinks, solvent vapor stations, photoresist operations, and wipe cleaning operations. [Basis: Cumulative Increase]

6. The owner/operator shall ensure the destruction efficiency of Thermal Processing Units (A-3, A-4, A-5, A-6, A-7, A-8, A-9, and A-10) is at least 99% by weight. [Basis: Cumulative Increase]

7. The owner/operator shall ensure the destruction efficiency of scrubbers (A-1, A-2, and A-11) is at least 95% by weight. [Basis: Cumulative Increase]

8. The owner/operator shall ensure supplemental fuel used at Thermal Processing Units (A-3, A-4, A-5, A-6, A-7, A-8, A-9, and A-10) is oxygen, hydrogen gas, and/or PUC quality natural gas. [Basis: Cumulative Increase]

9. The owner/operator shall maintain a minimum operating temperature of at least 1,400 degrees F in Thermal Processing Units (A-3, A-4, A-5, A-6, A-7, A-8, A-9, and A-10) when organic and/or inorganic emissions are vented to the above abatement devices. Each of these Thermal Processing Units may be operated at temperatures lower than 1,400 degrees F if the owner/operator can demonstrate compliance with Parts 2 and 6 at the lower temperature(s) via District approved source testing required by this permit condition. [Basis: Cumulative Increase]

10. If the operating temperature(s) of the Thermal Processing Units established under Part 9 of this permit condition is changed as a result of using alternate coating(s), cleanup solvent(s), organic liquids, and organic/inorganic gases other than the materials specified in Part 1a through 1d and/or materials in excess of those specified in Part 1a through 1d, the owner/operator shall demonstrate compliance with Parts 2 and 6 at the revised operating temperature(s) via District approved



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source testing within 30-days of re-establishing the operating temperature(s) of the Thermal Processing Units. Upon completion of the source test(s) and after the source test results are submitted to the District's Source Test Section for review in accordance with Parts 16 and 17, the owner/operator shall submit a permit application to the District requesting the operating temperature(s) for the Thermal Processing Units in Part 9 of this permit condition be revised. [Basis: Cumulative Increase]

11. The temperature limit in Part 9 shall not apply during an "Allowable Temperature Excursion", provided that the temperature controller set point complies with the temperature limit. An Allowable Temperature Excursion is one of the following:

- a. A temperature excursion not exceeding 20 degrees F; or;
- b. A temperature excursion for a period or periods which when combined are less than or equal to 15 minutes in any hour; or.
- c. A temperature excursion for a period or periods which when combined is more than 15 minutes in any hour, provided that all three of the following criteria are met.
  - 1. The excursion does not exceed 50 degrees F;
  - 2. The duration of the excursion does not exceed 24 hours; and
  - 3. The total number of such excursions does not exceed 12 per calendar year (or any consecutive 12 month period). Two or more excursions greater than 15 minutes in duration occurring during the same 24-hour period shall be counted as one excursion toward the 12-excursion limit. [Basis: Regulation 2-1-403]

12. For each Allowable Temperature Excursion that exceeds 20 degrees F and 15 minutes in duration, the Permit Holder shall keep sufficient records to demonstrate that they meet the qualifying criteria described above. Records shall be retained for a minimum of two years from the date of entry, and





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shall be made available to the District upon request. Records shall include at least the following information:

- a. Temperature controller set point;
- b. Starting date and time, and duration of each Allowable Temperature Excursion;
- c. Measured temperature during each Allowable Temperature Excursion;
- d. Number of Allowable Temperature Excursions per month, and total number for the current calendar year; and all strip charts or other temperature records. [Basis: Regulation 2-1-403]

13. The owner/operator shall report any non-compliance with Part 9 of this condition to the Director of the Compliance & Enforcement Division at the time that it is discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well at the time of occurrence. [Basis: Cumulative Increase, Regulation 2-5]

14. The owner/operator shall not emit more than 50 ppmv NOx @ 15% O2 (0.20 lbs/MMBTU) from Thermal Processing Units (A-3, A-4, A-5, A-6, A-7, A-8, A-9, and A-10)  
[Basis: RACT, Source Test Method 13A]

15. The owner/operator shall not emit more than 350 ppmv CO @ 15% O2 (0.80 lbs/MMBTU) from Thermal Processing Units (A-3, A-4, A-5, A-6, A-7, A-8, A-9, and A-10)  
[Basis: RACT, Source Test Method 6]

16. Within 60 days of starting up S-1, the owner/operator shall conduct District approved source tests to determine initial compliance with the parts 2, 6, 7, 14, & 15 of this permit condition. The owner/operator shall submit the source test results to the District's Source Test Section for review and approval within 60 days of the source test.  
[Basis: RACT, Cumulative Increase]



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17. The owner/operator shall submit and obtain approval of all source test procedures from the Manager of the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable source testing requirements as specified in Volume IV of the District's Manual of Procedures. The owner/operator shall notify the Manager of the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing.  
[Basis: RACT, Cumulative Increase]

18. In order to determine compliance with this permit condition, the owner/operator shall maintain the following records and shall provide all of the information necessary to evaluate compliance, including the following on a monthly basis: [Basis: Record-keeping]

- a. Quantities of each type of coating and solvent used at this source.
- b. If materials other than those specified in Part 1 are used or if a material is used in excess of the limits specified in part 1, emission calculations of POC/NPOC, Fluorides and toxic component contents of each material used to demonstrate compliance with Part 2.
- c. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.
- d. Quantities of each type of solvent recovered for disposal or recycling.
- e. Net Usage of each type of solvent.
- f. Copies of District approved source test results.

All records shall be retained on-site for two years from the date of entry and shall be made available for inspection to District staff upon request. The records may be in the form of computer-generated data, which is available to District personnel on short notice (rather than actual paper copies). These record-keeping requirements shall not replace the record-keeping requirements contained in any



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PLANT# 22839

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applicable District regulations. [Basis:  
Cumulative Increase, Toxics]

~~~~~ END OF CONDITIONS ~~~~~



September 13, 2023

Bay Area Air Quality Management District (BAAQMD)  
Engineering Division  
375 Beale Street, Suite 600  
San Francisco, CA 94105

**SUBJECT:** Apple Inc. Plant #22839

**RE:** Application for Permit Modification for BAAQMD Plant #22839

**REF:** 0664430

Apple Inc. (Apple) currently owns and operates emission sources under BAAQMD Plant #22839, located in Santa Clara, CA. Apple is requesting an authority to construct and permit to operate for a 1,700 gallon solvent waste tank (S-NEW) at the facility. S-NEW is a horizontal aboveground tank receiving waste solvent and water from solvent spray benches and wet benches from S-1 (Semiconductor Fab Research and Development Facility).

With this application, Apple has included the following documentation:

- Appendix A: BAAQMD permit application forms;
- Appendix B: Facility site map and process flow diagram;
- Appendix C: Emission calculations;
- Appendix D: Safety data sheets; and
- Appendix E: Equipment specifications.

We appreciate BAAQMD's ongoing support. If you have any questions regarding the attached application, please call me at (408) 908-0167.

Sincerely,

Tom Huynh  
EHS  
Apple Inc.

Attachment: Application for Permit Modification for BAAQMD Plant #22839



September 13, 2023

Bay Area Air Quality Management District (BAAQMD)  
Engineering Division  
375 Beale Street, Suite 600  
San Francisco, CA 94105

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**RE:** Application for Permit Modification for BAAQMD Plant #22839

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Sincerely,

  
Tom Huynh  
EHS  
Apple Inc.

Attachment: Application for Permit Modification for BAAQMD Plant #22839

**Appendix A: BAAQMD Permit Application Forms**



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

**Application Cover Form – “P-101B form”**

All fields are required unless otherwise noted. Please type or print.  
No information provided on this form can be marked trade secret.

Send to:  
BAAQMD  
Engineering Division  
375 Beale St., Suite 600  
San Francisco, CA 94105  
Email: [permits@baaqmd.gov](mailto:permits@baaqmd.gov)

Phone: (415) 749-4990

**1. Facility and Project Information**

- If this facility does not have a current BAAQMD permit or active permit application (new facility), fill out the **Facility Creation and Contacts Form** part of this form.
- If this application is in response to a Notice of Violation from BAAQMD Compliance & Enforcement Division, please enter the NOV number here

|                                                                                                                            |                                     |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Facility Name                                                                                                              | Facility ID (except new facilities) |
| Apple Inc. Facility ID 22839                                                                                               |                                     |
| Application Title/ Project or Equipment Description                                                                        |                                     |
| Solvent Waste Tank                                                                                                         |                                     |
| Equipment/Project Location in relation to facility location (e.g., NW corner of facility OR 338 Washington Dr.) (Optional) |                                     |
|                                                                                                                            |                                     |

**2. Application Contact**

|                                                       |           |                            |                       |
|-------------------------------------------------------|-----------|----------------------------|-----------------------|
| First Name                                            | Last Name |                            |                       |
| Kevin                                                 | Sung      |                            |                       |
| Business Name of Contact (If different from facility) |           | Contact Title              |                       |
|                                                       |           | EHS Engineer               |                       |
| Address Line 1                                        |           | Address Line 2 (Optional)  |                       |
| One Apple Park Way                                    |           | MS 991-SB01                |                       |
| City                                                  | State     | Zip Code                   |                       |
| Cupertino                                             | CA        | 95014                      |                       |
| E-mail Address                                        |           |                            |                       |
| kevin_sung@apple.com                                  |           |                            |                       |
| Primary Phone (xxx-xxx-xxxx)                          |           | Alternate Phone (Optional) | Fax Number (Optional) |
| 408-908-0167                                          |           |                            |                       |

**3. Proximity to a School (K-12)**

Is the equipment/project located within 1,000 ft of the outer boundary of the nearest school?  Yes  No

**4. Additional Information:** The following additional information is required to complete all permit applications and should be included with your submittal. Failure to provide this information may delay the review of your application.

- A facility map with street address or location and the property boundary, drawn roughly to scale, that locates the equipment and its emission points, completed data form(s), and a pollutant flow diagram for each piece of equipment. (See [www.baaqmd.gov/forms/permits](http://www.baaqmd.gov/forms/permits))
- Equipment/project description, manufacturer’s data
- Discussion and/or calculations of air pollutant emissions from the equipment

**5. Small Business Certification (optional):** If the facility identified in Part 1 qualifies as a small business as defined in Regulation 3, certify by checking boxes that your business meets all the following criteria. You may qualify for an application fee reduction.

- The business does not employ more than 10 persons and its gross annual income does not exceed \$750,000.
- And the business is not an affiliate of a non-small business. (Note: a non-small business employs more than 10 persons and/or its gross income exceeds \$750,000.)

**6. Green Business Certification (optional):** If the facility identified in Part 1 has been certified as a Green Business by the Association of Bay Area Governments and implemented by participating counties, check the box & include your documentation. You may qualify for an application fee reduction.

Green Business certificate included

An electronic version of this form and instructions can be found at [www.baaqmd.gov](http://www.baaqmd.gov).



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

**Application Cover Form – “P-101B form”**

All fields are required unless otherwise noted. Please type or print.  
No information provided on this form can be marked trade secret.

Send to:  
BAAQMD  
Engineering Division  
375 Beale St., Suite 600  
San Francisco, CA 94105  
Email: [permits@baaqmd.gov](mailto:permits@baaqmd.gov)

Phone: (415) 749-4990

**7. Accelerated Permitting (optional):** *The Accelerated Permitting Program entitles you to install and operate qualifying sources of air pollution and abatement equipment while your permit application is being processed. To qualify for this program, you must certify that your project will meet all of the following criteria. Please acknowledge each item by checking each box.*

- Uncontrolled emissions of any single pollutant are each less than 10 lbs/highest day, or the equipment has been pre-certified by the BAAQMD.
- Uncontrolled emissions of toxic compounds do not exceed the trigger levels identified in Table 2-5-1 (see Regulation 2, Rule 5).
- The source is not a diesel engine.
- The project is not subject to public notice requirements (the source is either more than 1000 ft. from the nearest school, or the source does not emit any toxic compound in Table 2-5-1 of BAAQMD Regulation 2, Rule 5).
- For replacement of abatement equipment, the new equipment must have an equal or greater overall abatement efficiency for all pollutants than the equipment being replaced.
- For alterations of existing sources, the requested change does not result in an increase in emissions for all pollutants.
- Payment of all applicable permit application fees (the minimum permit fee to install and operate each source). See Regulation 3 or contact the Engineering Division for help in determining your fees.

**8. CEQA** Please answer the following questions pertaining to CEQA (California Environmental Quality Act).

A Has another public agency prepared, required preparation of, or issued a notice regarding preparation of a California Environmental Quality Act (CEQA) document (initial study, negative declaration, environmental impact report, or other CEQA document) that analyzes impacts of this project or another project of which it is a part or to which it is related? If no, go to section 8B. Describe the document or notice, preparer, and date of document or expected date of completion:

N/A

B List and describe any other permits or agency approvals required for this project by city, regional, state or federal agencies

N/A

C List and describe all other prior or current projects for which either of the following statements is true: (1) the project that is the subject of this application could not be undertaken without the project listed below, (2) the project listed below could not be undertaken without the project that is the subject of this application:

N/A

**9. Trade Secret Information:** *Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to the public, unless you have asked BAAQMD to treat certain items as trade secret as specified in Regulation 2, Rule 1, Section 402.7.*

Does this application contain Trade Secret information?  Yes  No

- Each page containing trade secret information must be labeled “trade secret” with the trade secret information **clearly marked** and you must provide a “public copy” with the information **redacted**.
- For each item asserted to be trade secret, you must provide a statement which provides the basis for your claim.

**10. Certification/Signature**

*I hereby certify that I am authorized to complete this form for the facility and that all information contained herein is true and correct.*

*I acknowledge that all documentation in this application submittal is a matter of public record unless otherwise indicated per Section 9 of this form.*

|           |                 |                      |
|-----------|-----------------|----------------------|
| Name      | Title           |                      |
| Signature | Date (mm/dd/yy) | Phone (xxx-xxx-xxxx) |
|           |                 |                      |

An electronic version of this form and instructions can be found at [www.baaqmd.gov](http://www.baaqmd.gov).





BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Application Cover Form - "P-101B form"

All fields are required unless otherwise noted. Please type or print. No information provided on this form can be marked trade secret.

Send to: BAAQMD Engineering Division 375 Beale St., Suite 600 San Francisco, CA 94105 Email: permits@baaqmd.gov

Phone: (415) 749-4990

7. Accelerated Permitting (optional): The Accelerated Permitting Program entitles you to install and operate qualifying sources of air pollution and abatement equipment while your permit application is being processed. To qualify for this program, you must certify that your project will meet all of the following criteria. Please acknowledge each item by checking each box.

- Uncontrolled emissions of any single pollutant are each less than 10 lbs/highest day, or the equipment has been pre-certified by the BAAQMD.
Uncontrolled emissions of toxic compounds do not exceed the trigger levels identified in Table 2-5-1 (see Regulation 2, Rule 5).
The source is not a diesel engine.
The project is not subject to public notice requirements (the source is either more than 1000 ft. from the nearest school, or the source does not emit any toxic compound in Table 2-5-1 of BAAQMD Regulation 2, Rule 5).
For replacement of abatement equipment, the new equipment must have an equal or greater overall abatement efficiency for all pollutants than the equipment being replaced.
For alterations of existing sources, the requested change does not result in an increase in emissions for all pollutants.
Payment of all applicable permit application fees (the minimum permit fee to install and operate each source). See Regulation 3 or contact the Engineering Division for help in determining your fees.

8. CEQA Please answer the following questions pertaining to CEQA (California Environmental Quality Act).

A Has another public agency prepared, required preparation of, or issued a notice regarding preparation of a California Environmental Quality Act (CEQA) document (initial study, negative declaration, environmental impact report, or other CEQA document) that analyzes impacts of this project or another project of which it is a part or to which it is related? If no, go to section 8B. Describe the document or notice, preparer, and date of document or expected date of completion:

N/A

B List and describe any other permits or agency approvals required for this project by city, regional, state or federal agencies

N/A

C List and describe all other prior or current projects for which either of the following statements is true: (1) the project that is the subject of this application could not be undertaken without the project listed below, (2) the project listed below could not be undertaken without the project that is the subject of this application:

N/A

9. Trade Secret Information: Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to the public, unless you have asked BAAQMD to treat certain items as trade secret as specified in Regulation 2, Rule 1, Section 402.7.

Does this application contain Trade Secret information? [ ] Yes [x] No

- Each page containing trade secret information must be labeled "trade secret" with the trade secret information clearly marked and you must provide a "public copy" with the information redacted.
For each item asserted to be trade secret, you must provide a statement which provides the basis for your claim.

10. Certification/Signature

I hereby certify that I am authorized to complete this form for the facility and that all information contained herein is true and correct. I acknowledge that all documentation in this application submittal is a matter of public record unless otherwise indicated per Section 9 of this form.

Table with 3 columns: Name, Title, Date, Phone. Handwritten entries: TOM HUYNH, EAS Manager, 09/14/23, 408-595-0947.

An electronic version of this form and instructions can be found at www.baaqmd.gov.

**DATA FORM T**  
**Organic Liquid Evaporation**  
**(tankage, loading and handling)**

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

375 Beale Street, Suite 600... San Francisco, CA 94105

(415) 749-4990 FAX (415)-749-5030

1. Business Name: Apple Inc. Plant No: 22839  
(if unknown, leave blank)
2. SIC No: 3674 Date of Initial Operation 7/15/17 (approx) Source No S- NEW
3. Name or Description Solvent Waste Tank
4. Code materials\* in order of highest throughputs: 1) 157 2) 427 3) \_\_\_\_\_ 4) \_\_\_\_\_
5. Total throughput (all materials), last 12 months: 170 thousand gal **or** \_\_\_\_\_ thousand bbl
6. Typical % of total annual throughput: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %  
 Check box if loading/handling facility; complete lines 7-11 and omit the remainder of this form. (Also complete one Form T for each storage tank)
7. • Usage type:  Bulk plant (truck/rail car)  Bulk plant (marine)  Vehicle service station  
 Aircraft/marine servicing Other: N/A
8. • How many nozzles/loading arms? N/A How many pumps? N/A
9. • Make and model of nozzles/loading arms: N/A
10. • Nozzle/arm loads tank by:  splash fill  submerged fill  part splash, part submerged
11. • Upon loading, vapor space in tank(s) is:  Vented directly to atmosphere  
 Collected by nozzle/arm and sent to Abatement Device(s): A \_\_\_\_\_ A \_\_\_\_\_
12. Annual Average: Storage vapor pressure 0.73 psia **or** tank temperature \_\_\_\_\_ °F and RVP \_\_\_\_\_ psia
13. Highest v.p. of all materials stored: 1.29 psia **or** high tank temperature \_\_\_\_\_ °F and high RVP \_\_\_\_\_ psia
14. Highest °API of all material stored: N/A ° Lowest initial B.P. of all materials stored: 180.5 °F
15. Tank Type:  underground  fixed roof  internal floating roof  floating roof  
 pressure  other: \_\_\_\_\_
16. Tank volume: 1.7 thousand gallons **or** \_\_\_\_\_ thousand barrels
- 17 Tank Diameter: 5.89 ft height or length: 6.17 ft Check if applicable:  heated  insulated

**Fixed Roof Tanks Only**

18. Maximum fill rate: 600 gal/hr **or** \_\_\_\_\_ bbl/hr
19. Average height of vapor space: 2.3 ft Highest head space reactivity 50 %  
 Check box if emissions from this tank are controlled; complete lines 20 and 21.
20. • Emissions vent to what source(s) and/or abatement device(s)? S S A NEW A
21. • Do all gauging/sampling devices have gas-tight covers?  yes  no
22. Paint color:  Aluminum  White  Light grey  Medium grey  Other \_\_\_\_\_
23. Paint Condition:  good  poor

**Floating Roof Tanks Only**

24. Shell Type:  gunitied  riveted  welded  other: \_\_\_\_\_
25. Seal Type:  single  double  other: \_\_\_\_\_ Condition:  tight  loose
26. Maximum withdrawn rate: \_\_\_\_\_ gal/hr **or** \_\_\_\_\_ bbl/hr
27. Do all gauging/sampling devices enter below liquid level and have gas-tight covers?  yes  no
28. Roof type:  pan  pontoon  other: \_\_\_\_\_ Is emergency roof drain at least 90% covered?  yes  no

Person completing this form Tom Huynh

Date 9/12/2023

**\*See Material Code Reference List.**

(revised 4/12/16)



Data Form A  
ABATEMENT DEVICE

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

375 Beale Street, Suite 600 . . . San Francisco, CA 94105 . . . (415) 749-4990 . . . FAX (415) 749-5030

[ ] [ ]  
*for office use only*

**Abatement Device:** Equipment/process whose primary purpose is to reduce the quantity of pollutant(s) emitted to the atmosphere.

1. Business Name: Apple Inc. Plant No: 22839  
(If unknown, leave blank)

2. Name or Description Activated Carbon Canister Abatement Device No: A- NEW

3. Make, Model, and Rated Capacity Carbtrol G-1S Vapor Phase Canister 100 CFM

4. Abatement Device Code (See table\*) 56 Date of Initial Operation 7/15/17 (approx)

5. With regard to air pollutant flow into this abatement device, what source(s) and/or abatement device(s) are **immediately** upstream?

S- NEW    S- \_\_\_\_\_    S- \_\_\_\_\_    S- \_\_\_\_\_    S- \_\_\_\_\_  
S- \_\_\_\_\_    A- \_\_\_\_\_    A- \_\_\_\_\_    A- \_\_\_\_\_    A- \_\_\_\_\_    A- \_\_\_\_\_

6. Typical gas stream temperature at inlet: \_\_\_\_\_ °F

If this form is being submitted as part of an application for an **Authority to Construct**, completion of the following table is mandatory. If not, and the Abatement Device is *already in operation*, completion of the table is requested but not required.

|     | Pollutant                             | Weight Percent Reduction<br>(at typical operation) | Basis Codes<br>(See Table**) |
|-----|---------------------------------------|----------------------------------------------------|------------------------------|
| 7.  | Particulate                           |                                                    |                              |
| 8.  | Organics                              | 90%                                                | 7                            |
| 9.  | Nitrogen Oxides (as NO <sub>2</sub> ) |                                                    |                              |
| 10. | Sulfur Dioxide                        |                                                    |                              |
| 11. | Carbon Monoxide                       |                                                    |                              |
| 12. | Other:                                |                                                    |                              |
| 13. | Other:                                |                                                    |                              |

14.  Check box if this Abatement Device burns fuel; complete lines 1, 2 and 15-36 on Form C (using the Abatement Device No. above for the Source No.) and attach to this form.

15. With regard to air pollutant flow from this abatement device, what source(s), abatement device(s) and/or emission point(s) are **immediately** downstream?

S- \_\_\_\_\_    A- \_\_\_\_\_    A- \_\_\_\_\_    A- \_\_\_\_\_    P- \_\_\_\_\_    P- \_\_\_\_\_

Person completing this form: Tom Huynh Date: 9/13/2023

(revised 5/18)

**\*ABATEMENT DEVICE CODES**

| Code | DEVICE                                              |
|------|-----------------------------------------------------|
|      | ADSORBER (See Vapor Recovery)                       |
|      | AFTERBURNER                                         |
| 1    | CO Boiler                                           |
| 2    | Catalytic                                           |
| 3    | Direct Flame                                        |
| 4    | Flare                                               |
| 5    | Furnace-firebox                                     |
| 6    | Other                                               |
|      | BAGHOUSE (See Dry Filter)                           |
|      | CYCLONE (See Dry Inertial Collector / Scrubber)     |
|      | DUST CONTROL                                        |
| 68   | Water Spray                                         |
|      | DRY FILTER                                          |
| 7    | Absolute                                            |
| 8    | Baghouse, Pulse Jet                                 |
| 9    | Baghouse, Reverse Air                               |
| 10   | Baghouse, Reverse Jet                               |
| 11   | Baghouse, Shaking                                   |
| 12   | Baghouse, Simple                                    |
| 13   | Baghouse, Other                                     |
| 14   | Envelope                                            |
| 15   | Moving Belt                                         |
| 16   | Other                                               |
|      | DRY INERTIAL COLLECTOR                              |
| 17   | Cyclone, Dynamic                                    |
| 18   | Cyclone, Multiple (12 inches dia. or more)          |
| 19   | Cyclone, Multiple (less than 12 inches dia.)        |
| 20   | Cyclone, Simple                                     |
| 21   | Settling Chamber, Baffled/Louvered                  |
| 22   | Settling Chamber, Simple                            |
| 23   | Other                                               |
|      | ELECTROSTATIC PRECIPITATOR                          |
| 24   | Single Stage                                        |
| 25   | Single Stage, Wet                                   |
| 26   | Two Stage                                           |
| 27   | Two Stage, Wet                                      |
| 28   | Other                                               |
|      | INCINERATOR (See Afterburner)                       |
|      | INTERNAL COMBUSTION ENGINE CONTROL                  |
| 69   | Catalyzed Diesel Particulate Filter                 |
| 70   | Non-Cat. Diesel Part. Filter w/ Active Regeneration |
| 71   | Diesel Oxidation Catalyst                           |
| 72   | Oxidation Catalyst                                  |
|      | KNOCK-OUT POT (See Liquid Separator)                |
|      | LIQUID SEPARATOR                                    |
| 29   | Knock-out Pot                                       |
| 30   | Mist Eliminator, Horizontal Pad, Dry                |
| 31   | Mist Eliminator, Panel, Dry                         |
| 32   | Mist Eliminator, Spray/Irrigated                    |
| 33   | Mist Eliminator, Vertical Tube, Dry                 |
| 34   | Mist Eliminator, Other                              |
| 35   | Other                                               |
|      | NO <sub>x</sub> CONTROL                             |
| 66   | Selective Catalytic Reduction (SCR)                 |
| 67   | Non-Selective Catalytic Reduction (NSCR)            |
| 73   | Selective Non-Catalytic Reduction (SNCR)            |

| Code | DEVICE                                                                      |
|------|-----------------------------------------------------------------------------|
|      | SCRUBBER                                                                    |
| 36   | Baffle and Secondary Flow                                                   |
| 37   | Centrifugal                                                                 |
| 38   | Cyclone, Irrigated                                                          |
| 39   | Fibrous Packed                                                              |
| 40   | Impingement Plate                                                           |
| 41   | Impingement and Entrainment                                                 |
| 42   | Mechanically Aided                                                          |
| 43   | Moving Bed                                                                  |
| 44   | Packed Bed                                                                  |
| 45   | Preformed Spray                                                             |
| 46   | Venturi                                                                     |
| 47   | Other                                                                       |
|      | SETTLING CHAMBER (See Dry Inertial Collector)                               |
|      | SULFUR DIOXIDE CONTROL                                                      |
| 48   | Absorption and Regeneration, for Sulfur Plant                               |
| 49   | Claus Solution Reaction, for Sulfur Plant                                   |
| 50   | Dual Absorption, for H <sub>2</sub> S <sub>04</sub> Plant                   |
| 51   | Flue Gas Desulfurization, for Fossil Fuel Combustion                        |
| 52   | Reduction and Solution Regeneration, for Sulfur Plant                       |
| 53   | Reduction and Stretford Process, for Sulfur Plant                           |
| 54   | Sodium Sulfite-Bisulfite Scrubber, for H <sub>2</sub> S <sub>04</sub> Plant |
| 55   | Other                                                                       |
|      | VAPOR RECOVERY                                                              |
| 56   | Adsorption, Activated Carbon/Charcoal                                       |
| 57   | Adsorption, Silica                                                          |
| 58   | Adsorption, Other                                                           |
| 59   | Balance                                                                     |
| 60   | Compression/Condensation/Absorption                                         |
| 61   | Compression/Refrigeration                                                   |
| 62   | Condenser, Water-Cooled                                                     |
| 63   | Condenser, Other                                                            |
| 64   | Other                                                                       |
|      | MISCELLANEOUS                                                               |
| 74   | Soil Vapor Extraction Abatement System                                      |
| 75   | VOC Concentrator/Thermal Regenerator                                        |
| 76   | Ethylene Oxide Catalytic Bed, Electric                                      |
| 65   | Not classified above                                                        |

**\*\*BASIS CODES**

| Code | Method                                                                                 |
|------|----------------------------------------------------------------------------------------|
| 0    | Not applicable for this pollutant                                                      |
| 1    | Source testing or other measurement <b>by plant</b>                                    |
| 2    | Source testing or other measurement <b>by BAAQMD</b>                                   |
| 3    | Specifications from vendor                                                             |
| 4    | Material balance by plant using engineering expertise and knowledge of process         |
| 5    | Material balance <b>by BAAQMD</b> using engineering expertise and knowledge of process |
| 6    | Taken from AP-42 ("Compilation of Air Pollutant Emission Factors," EPA)                |
| 7    | Taken from literature, other than AP-42                                                |
| 8    | Guess                                                                                  |

**Appendix B: Facility Site Map and Process Flow Diagram**

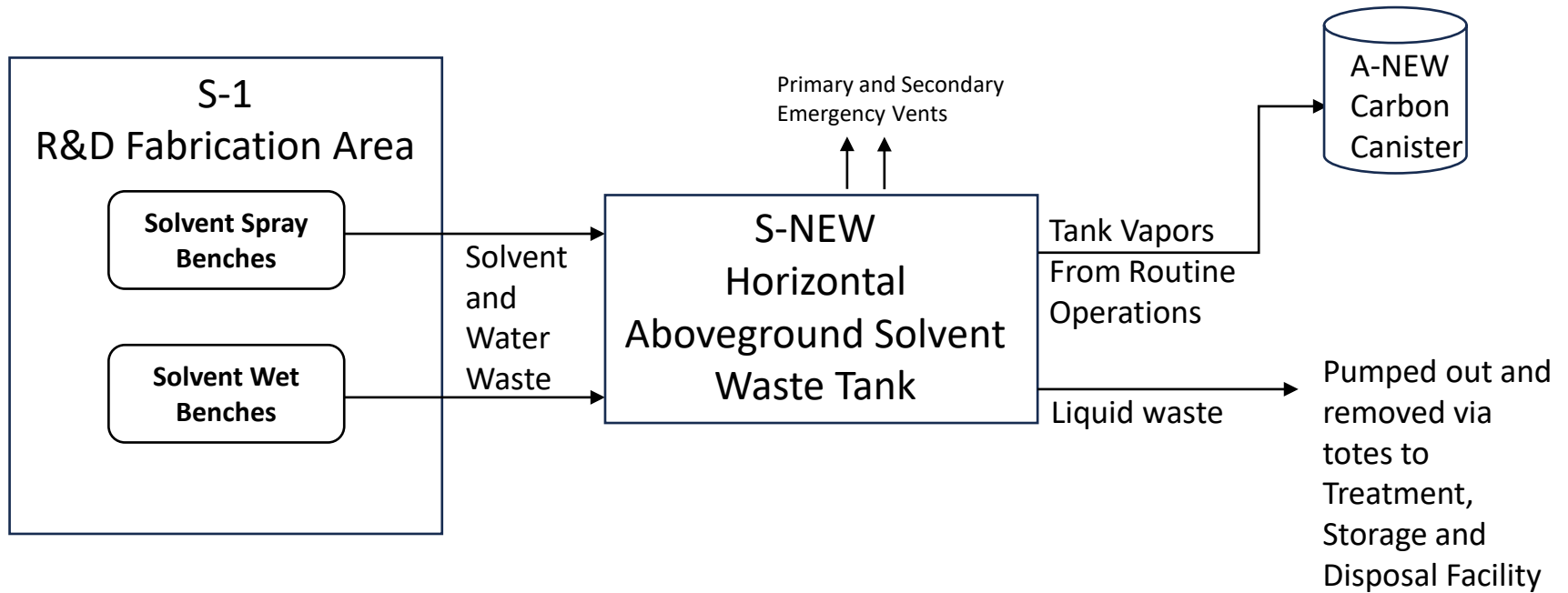
Figure 1 – Facility Map  
3250 Scott Blvd, Santa Clara, CA 95054



Approx Property Boundary

Solvent Waste Tank and Emission Points

Figure 2 - Basic Flow Diagram for Solvent Waste Tank  
3250 Scott Blvd, Santa Clara, CA 95054



## **Appendix C: Emission Calculations**



**Table 1- Tank Properties**

| Parameter                         |                    | Unit           | Solvent Waste Tank                  |
|-----------------------------------|--------------------|----------------|-------------------------------------|
|                                   |                    |                | S-NEW                               |
| Dimensions                        | Tank Type          | --             | Horizontal, Rectangular, Fixed Roof |
|                                   | Shell Height       | feet           | 6.17                                |
|                                   | Tank Length        | feet           | 8.42                                |
|                                   | Shell Diameter     | feet           | 5.89                                |
|                                   | Working Volume     | m <sup>3</sup> | 6.44                                |
|                                   |                    | gallons        | 1700                                |
|                                   | Net Throughput     | gallons/year   | 170,000                             |
|                                   | Turnovers per Year | --             | 100                                 |
| Insulated?                        | --                 | Yes            |                                     |
| Breather Vent Settings            | Vacuum Setting     | psig           | -0.50                               |
|                                   | Pressure Setting   | psig           | 0.50                                |
| Nearest Major City                |                    | --             | Santa Clara, CA                     |
| Average Bulk Liquid Temperature   |                    | F              | 86.0                                |
| Minimum Bulk Liquid Temperature   |                    | F              | 68.0                                |
| Maximum Bulk Liquid Temperature   |                    | F              | 104.0                               |
| Number of Tanks                   |                    | --             | 1                                   |
| Chemical Stored                   |                    | --             | Solvent Waste                       |
| Maximum Fill Rate (Based on Pump) |                    | gal/hr         | 600                                 |

Note: Shell diameter is calculated as the diameter of a vertical cross-section of the horizontal tank

1 gal = 0.00378541 m<sup>3</sup>

Table 2 - Chemical Properties

| Chemical Component <sup>1</sup> | CAS       | Mol wt (lb/lb-mole) | Component wt fractions | Component Liquid mole fractions | Vapor pressure constants <sup>2,3,4</sup> |         |        | Vapor Pressure at Average Temperature (psi) | Vapor Pressure at Minimum Temperature (psi) | Vapor Pressure at Maximum Temperature (psi) |
|---------------------------------|-----------|---------------------|------------------------|---------------------------------|-------------------------------------------|---------|--------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|                                 |           |                     | 0.00                   | 0.00                            | A                                         | B       | C      |                                             |                                             |                                             |
| IPA                             | 67-63-0   | 60.1                | 0.50                   | 0.231                           | 7.74                                      | 1357.43 | 197.34 | 1.13                                        | 0.60                                        | 2.01                                        |
| Water                           | 7732-18-5 | 18.02               | 0.50                   | 0.769                           | 7.95                                      | 1659.79 | 227.30 | 0.61                                        | 0.34                                        | 1.07                                        |

1. Solvent waste composition used in this analysis is conservative. Typical water content is ~84%. IPA was selected to represent solvent portion as it is a TAC and is the highest use solvent by volume at S-1.

2. IPA data is from NIST Webbook. Accessed at: <https://webbook.nist.gov/cgi/cbook.cgi?ID=C67630&Mask=4&Type=ANTOINE&Plot=on>

3. Water data is from NIST Webbook. Accessed at: <https://webbook.nist.gov/cgi/cbook.cgi?ID=C7732185&Mask=4&Type=ANTOINE&Plot=on>

4. NIST Webbook constants are expressed in units of bar and K for pressure and temperature respectively. The coefficients have been converted to appropriate units for Equation 1-26. A is converted by adding 2.8751; B remains the same; to convert C parameter from deg K to deg C, 273.15 is added. Pressure is then converted from mmHg to psia (760 mmHg = 14.7 psia) for use in other equations.

Ref: TANKS model FAQs. Accessed at <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-chapter-7-tanks-software-frequent-questions#5>

| Bulk temperature values for insulated horizontal tank | Value in deg F | Value in deg C |
|-------------------------------------------------------|----------------|----------------|
| Average Bulk Liquid Temperature                       | 86.00          | 30.00          |
| Minimum Bulk Liquid Temperature                       | 68.00          | 20.00          |
| Maximum Bulk Liquid Temperature                       | 104.00         | 40.00          |

| True vapor pressure for mixture (psia) |                 |                 |                 |
|----------------------------------------|-----------------|-----------------|-----------------|
| Tank Contents                          | TVP at Avg Temp | TVP at Min Temp | TVP at Max Temp |
| Solvent Waste                          | 0.73            | 0.40            | 1.29            |

$P_{VA}$ , total vapor pressure of the stored liquid, by Raoult's Law, is:

$$P_{VA} = \sum P_{Xi} \quad (1-23)$$

The true vapor pressure of organic liquids at the stored liquid temperature can also be estimated by Antoine's equation:

$$\log P_{VA} = A - \left( \frac{B}{T_{LA} + C} \right) \quad (1-26)$$

where:

log = log 10

A = constant in vapor pressure equation, dimensionless

B = constant in vapor pressure equation, °C

C = constant in vapor pressure equation, °C

$T_{LA}$  = average daily liquid surface temperature, °C

$P_{VA}$  = vapor pressure at average liquid surface temperature, mm Hg

Table 3 - Tank Emissions Calculations - Standing Losses

| Symbol/Equation                                                            | Description                                             | Units                             | S-NEW       | Reference*    | Notes                                                                           |
|----------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------|-------------|---------------|---------------------------------------------------------------------------------|
| <b>Breathing Losses:</b>                                                   | Horizontal Tank, 1700 gallon capacity                   |                                   | <b>0.00</b> |               |                                                                                 |
| $L_s = 365 \cdot V_v \cdot W_v \cdot K_e \cdot K_s$                        | Standing storage loss, $L_s$                            | lb/yr                             | 0.57        | Equation 1-2  |                                                                                 |
| $T_{la}$                                                                   | daily average liquid surface temperature                | F                                 | 86          |               | Per Tank Parameters Table                                                       |
| $V_v = (\pi/4) \cdot D^2 \cdot H_{vo}$                                     | vapor space volume                                      | ft <sup>3</sup>                   | 7           | Equation 1-3  | Calculation                                                                     |
| $K_e = \Delta T_v / (T_{la} + (\Delta P_v - \Delta P_b) / (P_a - P_{va}))$ | vapor space expansion factor                            | dimensionless                     | 0.058       | Equation 1-5  | Calculation                                                                     |
| $K_s = 1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo})$                          | vented vapor saturation factor                          | dimensionless                     | 0.918       | Equation 1-21 | Calculation                                                                     |
| $D_e = \sqrt{LD} / \pi / 4$                                                | effective tank diameter, DE                             | ft                                | 1.99        | Equation 1-14 | For horizontal tanks, effective tank diameter is calculated from tank D and L   |
| $H_{vo} = H_t / 2$                                                         | vapor space outage, Hvo                                 | ft                                | 2.31        | Equation 1-16 | For horizontal tanks, vapor space outage is one-half of effective height        |
| $H_t = (\pi/4) \cdot D$                                                    | effective tank height                                   | ft                                | 4.63        | Equation 1-15 |                                                                                 |
| $W_v = M_v \cdot P_{va} / (R \cdot T_{la})$                                | stock vapor density, Wv                                 | lb/ft <sup>3</sup>                | 4.1E-03     | Equation 1-22 |                                                                                 |
| $M_v$                                                                      | vapor molecular weight                                  | lb/lb-mole                        | 32.96       |               | Equation 1-23                                                                   |
| $P_{va}$                                                                   | vapor pressure at daily average bulk liquid temperature | psia                              | 0.73        |               | Sum of partial pressures at average temperature                                 |
| $P_{vn}$                                                                   | vapor pressure at daily minimum bulk liquid temperature | psia                              | 0.40        |               | Sum of partial pressures at minimum temperature                                 |
| $P_{vx}$                                                                   | vapor pressure at daily maximum bulk liquid temperature | psia                              | 1.29        |               | Sum of partial pressures at max temperature                                     |
| $T_{la}$                                                                   | daily average liquid surface temperature                | R                                 | 545.67      | Equation 8-2  | Average liquid bulk temperature ( $T_{LA} = T_b$ for fully insulated tanks)     |
| $R$                                                                        | ideal gas constant                                      | psia*ft <sup>3</sup> /(lb-mole*R) | 10.73       |               |                                                                                 |
| $\Delta T_v = T_{Bx} - T_{Bn}$                                             | daily vapor temperature range                           | °R                                | 36          | Equation 8-1  | Calculation                                                                     |
| $\Delta P_v$                                                               | daily vapor pressure range                              | psia                              | 0.889       | Equation 1-9  | Calculation                                                                     |
| $\Delta P_b$                                                               | breather vent pressure setting                          | psia                              | 1.00        | Equation 1-10 | Vent pressure setting, $P_{Bv} = 0.5$ psia, Vacuum setting $P_{Bv} = -0.5$ psia |
| Liquid Mass Fractions                                                      | IPA                                                     | dimensionless                     | 0.50        |               | Refer to the Chemical Properties Table                                          |
|                                                                            | Water                                                   | dimensionless                     | 0.50        |               |                                                                                 |
| Vapor Mass Fractions                                                       | IPA                                                     | dimensionless                     | 0.65        |               | Calculation (Vapor Mole Fraction * Component MW/ Vapor MW)                      |
|                                                                            | Water                                                   | dimensionless                     | 0.35        |               |                                                                                 |
| MW_organic                                                                 | IPA                                                     | lb/lb-mole                        | 60.10       |               | Refer to the Chemical Properties Table                                          |
|                                                                            | Water                                                   | lb/lb-mole                        | 18.02       |               |                                                                                 |
| X_component (Liquid Mole Fraction)                                         | IPA                                                     | dimensionless                     | 0.23        |               | Refer to the Chemical Properties Table                                          |
|                                                                            | Water                                                   | dimensionless                     | 0.77        |               |                                                                                 |
| Y_component (Vapor Mole Fraction)                                          | IPA                                                     | dimensionless                     | 0.36        |               | Calculation (partial vapor pressure/vapor pressure)                             |
|                                                                            | Water                                                   | dimensionless                     | 0.64        |               |                                                                                 |
| partial vapor pressure at daily average liquid surface temperature         | IPA                                                     | psia                              | 0.26        |               | Calculation (Liquid Mole Fraction * Vapor Pressure at Avg Temp)                 |
|                                                                            | Water                                                   | psia                              | 0.47        |               |                                                                                 |
| partial vapor pressure at daily minimum liquid surface temperature         | IPA                                                     | psia                              | 0.14        |               | Calculation (Liquid Mole Fraction * Vapor Pressure at Minimum Temp)             |
|                                                                            | Water                                                   | psia                              | 0.26        |               |                                                                                 |
| partial vapor pressure at daily maximum liquid surface temperature         | IPA                                                     | psia                              | 0.46        |               | Calculation (Liquid Mole Fraction * Vapor Pressure at Max Temp)                 |
|                                                                            | Water                                                   | psia                              | 0.82        |               |                                                                                 |
| $T_{Bx}$                                                                   | typical maximum liquid bulk temperature                 | °R                                | 563.67      |               |                                                                                 |
| $T_{Bn}$                                                                   | typical minimum liquid bulk temperature                 | °R                                | 527.67      |               |                                                                                 |
| $P_a$                                                                      | daily average ambient pressure (Santa Clara, CA)        | psia                              | 14.82       |               | Data from NSRDB: National Solar Radiation Database for 2015 - 2019              |
|                                                                            | constant                                                | (psia-ft) <sup>-1</sup>           | 0.053       |               |                                                                                 |
| Days per year                                                              | constant                                                | year <sup>-1</sup>                | 365         |               |                                                                                 |

\*Equations are from AP 42, Fifth Edition, Volume I Chapter 7: Liquid Storage Tanks, including reference to Section 7.1.3.8.4 (Heating Cycles in Fully Insulated Fixed Roof Tanks) where necessary  
 The tank is an insulated horizontal rectangular tank. It is assumed the tank receives heated solvent waste on occasion, leading to temperature variations. As the tank is designed for liquid storage at temperatures lower than 104 F, this value is used as the maximum bulk temperature. A temperature of 68 F is used as the typical minimum liquid bulk temperature.

**Table 3 - Tank Emissions Calculations - Working Losses**

**Governing Equation (1-35)**

$$Lw = V_Q * K_N * K_p * W_v * K_B$$

| Unit Conversions |    |
|------------------|----|
| 1 barrel (bbl) = | 42 |

**Working Loss Input Parameters**

| Parameter                  | S-NEW    | Unit               | Description                                                            | Reference     |
|----------------------------|----------|--------------------|------------------------------------------------------------------------|---------------|
| W <sub>v</sub>             | 4.12E-03 | lb/ft <sup>3</sup> | Vapor stock density                                                    | Equation 1-22 |
| Q                          | 170,000  | gal/yr             | Annual net throughput (tank capacity [gal] times annual turnover rate) |               |
| D                          | 2.0      | ft                 | Tank diameter                                                          |               |
| H <sub>lx</sub>            | 4.63     | ft                 | Maximum liquid height                                                  |               |
| H <sub>L<sub>N</sub></sub> | 0.00     | ft                 | Minimum liquid height for horizontal tanks                             |               |
| K <sub>p</sub>             | 1        | dimensionless      | Working loss product factor                                            | Equation 1-37 |
|                            |          |                    | for crude oils K <sub>p</sub> = 0.75                                   |               |
|                            |          |                    | for all other organic liquids, K <sub>p</sub> = 1                      |               |

**Tank Calculated Parameters\***

| Parameter                                                 | S-NEW | Unit            | Description                                                            | Reference     |
|-----------------------------------------------------------|-------|-----------------|------------------------------------------------------------------------|---------------|
| Q                                                         | 4048  | bbl/yr          | Annual net throughput (tank capacity [bbl] times annual turnover rate) |               |
| V <sub>Q</sub>                                            | 22723 | ft <sup>3</sup> | Tank maximum liquid volume                                             | Equation 1-39 |
| K <sub>B</sub>                                            | 1     | dimensionless   | Vent setting correction factor, since Eq 1-40 is not met               |               |
| $K_N \left[ \frac{P_{BP} + P_A}{P_I + P_A} \right] > 1.0$ | 0.19  | dimensionless   | Condition check for vent setting correction factor calculation         | Equation 1-40 |
| N                                                         | 1586  | dimensionless   | Number of turnovers per year                                           | Equation 1-36 |
| K <sub>N</sub>                                            | 0.19  | dimensionless   | Working loss turnover (saturation) factor,                             | Equation 1-35 |
|                                                           |       |                 | for turnovers >36, kn = (180 + N)/6N<br>for turnover ≤ 36, Kn = 1      |               |

**Working Losses Calculation**

| Number of Tanks | S-NEW | Unit  |
|-----------------|-------|-------|
| 1               | 17.4  | lb/yr |

Total working losses

17.4

lb/yr

\*The references in these calculations are to AP 42, Fifth Edition, Volume I Chapter 7: Liquid Storage Tanks

\*<https://www3.epa.gov/ttn/chief/ap42/ch07/final/c07s00.pdf>

**Table 5 - Emissions Summary**

Total routine loss = Standing loss + working loss

$$L_T = L_S + L_W$$

| Parameter                       | Value | Unit  | Notes                                        |
|---------------------------------|-------|-------|----------------------------------------------|
| Breathing loss (POC), $L_S$     | 0.57  | lb/yr |                                              |
| Working loss (POC), $L_W$       | 17.36 | lb/yr |                                              |
| Total routine loss (POC), $L_T$ | 17.93 | lb/yr |                                              |
| Carbon abatement efficiency     | 90%   |       | Conservative assumption; See reference below |
| Controlled POC emissions        | 1.79  | lb/yr |                                              |

| Toxic Air Contaminant Emissions  | Value    | Unit  | Notes                                                    |
|----------------------------------|----------|-------|----------------------------------------------------------|
| Annual IPA Emissions             | 0.90     | lb/yr | 50% IPA by weight                                        |
| Chronic Trigger from Table 2-5-1 | 2.70E+05 | lb/yr |                                                          |
| Exceeds trigger?                 | No       |       |                                                          |
| Hourly IPA Emissions             | 3.16E-03 | lb/hr | Calculated based annual throughput and maximum pump rate |
| Acute Trigger from Table 2-5-1   | 1.4      | lb/hr |                                                          |
| Exceeds trigger?                 | No       |       |                                                          |

Reference for carbon abatement efficiency: EPA Cost Control Manual states that carbon adsorbers can achieve VOC remove efficiencies of 95 to 99%; therefore 90% is a conservative value. EPA Air Pollution Cost Control Manual, Section 3.1, Chapter 1 - Carbon Adsorbers. October 2018. Accessed at: [https://www.epa.gov/sites/default/files/2018-10/documents/final\\_carbonadsorberschapter\\_7thedition.pdf](https://www.epa.gov/sites/default/files/2018-10/documents/final_carbonadsorberschapter_7thedition.pdf)

**Table 6 - Estimated Fees**

| Category              | Rate                                               | Amount (USD) | Reference                                                                                  |
|-----------------------|----------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| Filing Fee            | \$630                                              | \$ 630.00    | Reg 3                                                                                      |
| Initial Fee           | 0.185 cents per gallon; min \$204 and max \$27,858 | \$ 314.50    | Reg 3, Schedule C                                                                          |
| Risk Assessment Fee   | \$630 + 0.185 cents per gallon                     | \$ -         | Not applicable per 3-329 as TAC emissions are below Reg 2-5 trigger levels                 |
| Permit to Operate Fee | 0.093 cents per gallon; min \$147 and max \$13,928 | \$ 158.10    | Reg 3, Schedule C                                                                          |
| Toxic Surcharge       | 10% of Permit to Operate Fee                       | \$ -         | Not applicable as source does not emit TACs at a rate above Reg 2-5 chronic trigger levels |
| Total                 |                                                    | \$ 1,102.60  |                                                                                            |

Note: Fees calculated based on Reg 3 effective 7/1/2023

**Appendix D: Safety Data Sheet**

## SAFETY DATA SHEET

Creation Date 01-September-2009

Revision Date 18-January-2018

Revision Number 4

### 1. Identification

**Product Name** 2-Propanol

**Cat No. :** A426F-1GAL; A426P-4; A426S-4; A426S-20; A426S-200

**CAS-No** 67-63-0

**Synonyms** 2-Propanol; IPA; Isopropyl alcohol; Propan-2-ol; Isopropanol

**Recommended Use** Laboratory chemicals.

**Uses advised against** Not for food, drug, pesticide or biocidal product use

#### Details of the supplier of the safety data sheet

##### Company

##### **Importer/Distributor**

Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

##### **Manufacturer**

Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

##### **Emergency Telephone Number**

CHEMTREC®, Inside the USA: 800-424-9300  
CHEMTREC®, Outside the USA: 001-703-527-3887

### 2. Hazard(s) identification

#### Classification

**WHMIS 2015 Classification** Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

|                                                                   |            |
|-------------------------------------------------------------------|------------|
| <b>Flammable liquids</b>                                          | Category 2 |
| <b>Serious Eye Damage/Eye Irritation</b>                          | Category 2 |
| <b>Specific target organ toxicity (single exposure)</b>           | Category 3 |
| Target Organs - Respiratory system, Central nervous system (CNS). |            |
| <b>Specific target organ toxicity - (repeated exposure)</b>       | Category 2 |
| Target Organs - Kidney, Liver.                                    |            |

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Highly flammable liquid and vapor  
Causes serious eye irritation  
May cause respiratory irritation  
May cause drowsiness and dizziness  
May cause damage to organs through prolonged or repeated exposure



**Precautionary Statements****Prevention**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

Keep container tightly closed

Ground/bond container and receiving equipment

Use explosion-proof electrical/ventilating/lighting/equipment

Use only non-sparking tools

Take precautionary measures against static discharges

Do not breathe dust/fumes/gas/mist/vapours/spray

Wash face, hands and any exposed skin thoroughly after handling

Use only outdoors or in a well-ventilated area

Wear protective gloves/protective clothing/eye protection/face protection

**Response**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower

IF INHALED: Remove person to fresh air and keep comfortable for breathing

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Call a POISON CENTER/ doctor if you feel unwell

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

**Storage**

Store in a well-ventilated place. Keep container tightly closed

Store locked up

**Disposal**

Dispose of contents/container to an approved waste disposal plant

### 3. Composition/Information on Ingredients

| Component         | CAS-No  | Weight % |
|-------------------|---------|----------|
| Isopropyl alcohol | 67-63-0 | >95      |

### 4. First-aid measures

|                                        |                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye Contact</b>                     | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.                                                                          |
| <b>Skin Contact</b>                    | Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.                                                                              |
| <b>Inhalation</b>                      | Move to fresh air. Obtain medical attention. If not breathing, give artificial respiration.                                                                                              |
| <b>Ingestion</b>                       | Do not induce vomiting. Obtain medical attention.                                                                                                                                        |
| <b>Most important symptoms/effects</b> | Breathing difficulties. May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting |
| <b>Notes to Physician</b>              | Treat symptomatically                                                                                                                                                                    |

### 5. Fire-fighting measures

|                                         |                                                                                                                            |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Suitable Extinguishing Media</b>     | CO <sub>2</sub> , dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray. |
| <b>Unsuitable Extinguishing Media</b>   | Water may be ineffective                                                                                                   |
| <b>Flash Point</b>                      | 12 °C / 53.6 °F                                                                                                            |
| <b>Method -</b>                         | Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106)                                                                    |
| <b>Autoignition Temperature</b>         | 425 °C / 797 °F                                                                                                            |
| <b>Explosion Limits</b>                 |                                                                                                                            |
| <b>Upper</b>                            | 12 vol %                                                                                                                   |
| <b>Lower</b>                            | 2 vol %                                                                                                                    |
| <b>Sensitivity to Mechanical Impact</b> | No information available                                                                                                   |
| <b>Sensitivity to Static Discharge</b>  | No information available                                                                                                   |

**Specific Hazards Arising from the Chemical**

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

**Hazardous Combustion Products**

Carbon monoxide (CO) Carbon dioxide (CO<sub>2</sub>) peroxides

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**

|               |                     |                    |                         |
|---------------|---------------------|--------------------|-------------------------|
| <b>Health</b> | <b>Flammability</b> | <b>Instability</b> | <b>Physical hazards</b> |
| 2             | 3                   | 0                  | N/A                     |

**6. Accidental release measures**

|                                  |                                                                                                                                                                       |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Personal Precautions</b>      | Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing. |
| <b>Environmental Precautions</b> | Should not be released into the environment. See Section 12 for additional ecological information.                                                                    |

|                                             |                                                                                                                                                                                                                                                                                            |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Methods for Containment and Clean Up</b> | Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Keep in suitable, closed containers for disposal. |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**7. Handling and storage**

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Handling</b> | Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. |
| <b>Storage</b>  | Keep away from heat and sources of ignition. Flammables area. Keep container tightly closed in a dry and well-ventilated place.                                                                                                                                                                                                                                                                                            |

**8. Exposure controls / personal protection****Exposure Guidelines**

| Component         | Alberta                  | British Columbia              | Ontario TWAEV                 | Quebec                   | ACGIH TLV                     | OSHA PEL                  | NIOSH IDLH                     |
|-------------------|--------------------------|-------------------------------|-------------------------------|--------------------------|-------------------------------|---------------------------|--------------------------------|
| Isopropyl alcohol | TWA: 200 ppm<br>TWA: 492 | TWA: 200 ppm<br>STEL: 400 ppm | TWA: 200 ppm<br>STEL: 400 ppm | TWA: 400 ppm<br>TWA: 985 | TWA: 200 ppm<br>STEL: 400 ppm | (Vacated) TWA:<br>400 ppm | IDLH: 2000 ppm<br>TWA: 400 ppm |

|  |                                                                      |  |  |                                                                       |  |                                                                                                                                                                     |                                                                                   |
|--|----------------------------------------------------------------------|--|--|-----------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | mg/m <sup>3</sup><br>STEL: 400 ppm<br>STEL: 984<br>mg/m <sup>3</sup> |  |  | mg/m <sup>3</sup><br>STEL: 500 ppm<br>STEL: 1230<br>mg/m <sup>3</sup> |  | (Vacated) TWA:<br>980 mg/m <sup>3</sup><br>(Vacated) STEL:<br>500 ppm<br>(Vacated) STEL:<br>1225 mg/m <sup>3</sup><br>TWA: 400 ppm<br>TWA: 980<br>mg/m <sup>3</sup> | TWA: 980<br>mg/m <sup>3</sup><br>STEL: 500 ppm<br>STEL: 1225<br>mg/m <sup>3</sup> |
|--|----------------------------------------------------------------------|--|--|-----------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|

**Legend**

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

**Engineering Measures**

Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment****Eye Protection**

Goggles

**Hand Protection**

Wear appropriate protective gloves and clothing to prevent skin exposure.

| Glove material | Breakthrough time   | Glove thickness | Glove comments                                                                       |
|----------------|---------------------|-----------------|--------------------------------------------------------------------------------------|
| Butyl rubber   | > 480 minutes       | 0.5 mm          | Permeation rate < 0.9<br>µg/cm <sup>2</sup> /min                                     |
| Nitrile rubber | > 360 - 480 minutes | 0.35 - 0.55 mm  | As tested under EN374-3<br>Determination of Resistance to<br>Permeation by Chemicals |

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to EN14387

When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls**

No information available.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

## 9. Physical and chemical properties

|                            |                          |
|----------------------------|--------------------------|
| <b>Physical State</b>      | Liquid                   |
| <b>Appearance</b>          | Colorless                |
| <b>Odor</b>                | Alcohol-like             |
| <b>Odor Threshold</b>      | No information available |
| <b>pH</b>                  | 7 1% aq. sol             |
| <b>Melting Point/Range</b> | -89.5 °C / -129.1 °F     |

|                                               |                                                         |
|-----------------------------------------------|---------------------------------------------------------|
| <b>Boiling Point/Range</b>                    | 81 - 83 °C / 177.8 - 181.4 °F @ 760 mmHg                |
| <b>Flash Point</b>                            | 12 °C / 53.6 °F                                         |
| <b>Method -</b>                               | Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106) |
| <b>Evaporation Rate</b>                       | 1.7                                                     |
| <b>Flammability (solid,gas)</b>               | Not applicable                                          |
| <b>Flammability or explosive limits</b>       |                                                         |
| <b>Upper</b>                                  | 12 vol %                                                |
| <b>Lower</b>                                  | 2 vol %                                                 |
| <b>Vapor Pressure</b>                         | 43 mmHg @ 20 °C                                         |
| <b>Vapor Density</b>                          | 2.1 @ 20 °C / 68 °F                                     |
| <b>Specific Gravity</b>                       | 0.785                                                   |
| <b>Solubility</b>                             | Miscible with water                                     |
| <b>Partition coefficient; n-octanol/water</b> | No data available                                       |
| <b>Autoignition Temperature</b>               | 425 °C / 797 °F                                         |
| <b>Decomposition Temperature</b>              | No information available                                |
| <b>Viscosity</b>                              | 2.27 mPa.s at 20 °C                                     |
| <b>Molecular Formula</b>                      | C3 H8 O                                                 |
| <b>Molecular Weight</b>                       | 60.1                                                    |
| <b>VOC Content(%)</b>                         | 100% (Organic Carbon (by mass) = 59.9 %) (EC/1999/13)   |
| <b>Refractive index</b>                       | 1.377 at 20 °C / 68 °F (ASTM D-1218)                    |
| <b>Surface tension</b>                        | 22.7 mN/m at 20 °C / 68 °F                              |
| <b>Coefficient of expansion</b>               | 0.0009 / °C                                             |
| <b>Dielectric constant</b>                    | 18.6 at 20 °C / 68 °F                                   |
| <b>Heat of vapourisation</b>                  | 665 J/g                                                 |
| <b>Specific heat capacity</b>                 | 3 kJ/kg °C at 20 °C / 68 °F                             |
| <b>Thermal conductivity</b>                   | 0.137 W/m °C at 20 °C / 68 °F                           |

## 10. Stability and reactivity

|                                         |                                                                                            |
|-----------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Reactive Hazard</b>                  | None known, based on information available                                                 |
| <b>Stability</b>                        | Stable under normal conditions.                                                            |
| <b>Conditions to Avoid</b>              | Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition. |
| <b>Incompatible Materials</b>           | Strong oxidizing agents, Acids, Halogens, Acid anhydrides                                  |
| <b>Hazardous Decomposition Products</b> | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), peroxides                         |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.                                                   |
| <b>Hazardous Reactions</b>              | None under normal processing.                                                              |

## 11. Toxicological information

### Acute Toxicity

#### Product Information

#### Component Information

| Component         | LD50 Oral          | LD50 Dermal                                   | LC50 Inhalation       |
|-------------------|--------------------|-----------------------------------------------|-----------------------|
| Isopropyl alcohol | 5840 mg/kg ( Rat ) | 13900 mg/kg ( Rat )<br>12870 mg/kg ( Rabbit ) | 72.6 mg/L ( Rat ) 4 h |

**Toxicologically Synergistic Products** No information available

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

|                      |                             |
|----------------------|-----------------------------|
| <b>Irritation</b>    | Irritating to eyes and skin |
| <b>Sensitization</b> | No information available    |

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Component         | CAS-No  | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|-------------------|---------|------------|------------|------------|------------|------------|
| Isopropyl alcohol | 67-63-0 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** Respiratory system Central nervous system (CNS)

**STOT - repeated exposure** Kidney Liver

**Aspiration hazard** No information available

**Symptoms / effects, both acute and delayed** May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

. Do not empty into drains.

| Component         | Freshwater Algae                                                                                           | Freshwater Fish                                                                                                                                                               | Microtox                                              | Water Flea                                      |
|-------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------|
| Isopropyl alcohol | EC50: > 1000 mg/L, 72h<br>(Desmodesmus subspicatus)<br>EC50: > 1000 mg/L, 96h<br>(Desmodesmus subspicatus) | LC50: > 1400000 µg/L, 96h<br>(Lepomis macrochirus)<br>LC50: = 9640 mg/L, 96h<br>flow-through (Pimephales promelas)<br>LC50: = 11130 mg/L, 96h<br>static (Pimephales promelas) | = 35390 mg/L EC50<br>Photobacterium phosphoreum 5 min | 13299 mg/L EC50 = 48 h<br>9714 mg/L EC50 = 24 h |

**Persistence and Degradability** Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its volatility.

| Component         | log Pow |
|-------------------|---------|
| Isopropyl alcohol | 0.05    |

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

### DOT

**UN-No** UN1219  
**Proper Shipping Name** Isopropanol  
**Hazard Class** 3  
**Packing Group** II

### TDG

|                             |                                 |
|-----------------------------|---------------------------------|
| <b>UN-No</b>                | UN1219                          |
| <b>Proper Shipping Name</b> | ISOPROPANOL                     |
| <b>Hazard Class</b>         | 3                               |
| <b>Packing Group</b>        | II                              |
| <b>IATA</b>                 |                                 |
| <b>UN-No</b>                | UN1219                          |
| <b>Proper Shipping Name</b> | Isopropanol                     |
| <b>Hazard Class</b>         | 3                               |
| <b>Packing Group</b>        | II                              |
| <b>IMDG/IMO</b>             |                                 |
| <b>UN-No</b>                | UN1219                          |
| <b>Proper Shipping Name</b> | Isopropanol (Isopropyl alcohol) |
| <b>Hazard Class</b>         | 3                               |
| <b>Packing Group</b>        | II                              |

## 15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

### International Inventories

| Component         | DSL | NDSL | TSCA | EINECS    | ELINCS | NLP | PICCS | ENCS | AICS | IECSC | KECL |
|-------------------|-----|------|------|-----------|--------|-----|-------|------|------|-------|------|
| Isopropyl alcohol | X   | -    | X    | 200-661-7 | -      |     | X     | X    | X    | X     | X    |

### Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

| Component         | Canada - National Pollutant Release Inventory (NPRI)       | Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances | Canada's Chemicals Management Plan (CEPA) |
|-------------------|------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------|
| Isopropyl alcohol | Part 1, Group A Substance<br>Part 5, Individual Substances |                                                                            |                                           |

## 16. Other information

**Prepared By** Regulatory Affairs  
Thermo Fisher Scientific  
Email: EMSDS.RA@thermofisher.com

**Creation Date** 01-September-2009

**Revision Date** 18-January-2018

**Print Date** 18-January-2018

**Revision Summary** This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**

**Appendix E: Equipment Specifications**

NO. REQD.: ONE (1)

ITEM NO.: FG1700R



modern welding company of california, inc.

4141 N. BRAWLEY AVE FRESNO, CA 93722  
PH. 559-275-9353 FAX 559-275-4381

INTEGRATED ENGINEERING SERVICES  
1,700 GALLON UL 2085 FIREGUARD TANK

|         |    |              |                 |
|---------|----|--------------|-----------------|
| DWN. BY | JC | DATE 8/19/16 | SCALE: NONE     |
| CHK. BY |    | JOB NO.      | DWG. NO. 13826  |
| APR. BY |    | P.O. NO.     | SHT. NO. 1 OF 1 |

| MARK | REQ'D | SIZE | TYPE | REMARKS     |
|------|-------|------|------|-------------|
| A    | 1     | 6"   | RFSO | SPARE       |
| B    | 1     | 4"   | RFSO | PUMP        |
| C    | 1     | 6"   | RFSO | VENT        |
| D    | 1     | 6"   | FFSO | SEC. E-VENT |
| E    | 1     | 6"   | FFSO | PRI. E-VENT |
| F    | 1     | 6"   | RFSO | SPARE       |
| G    | 1     | 2"   | RFSO | MONITOR     |
| H    | 1     | 6"   | RFSO | SPARE       |
| J    | 1     | 6"   | RFSO | SPARE       |
| K    | 1     | 4"   | RFSO | WASTE INLET |

— SCHEDULE OF OPENINGS —

**GENERAL NOTES**  
1) INNER & OUTER TANKS SHALL BE CONSTRUCTED PER UL-142. TANKS SHALL BEAR UL 2085 LABEL FOR "INSULATED SECONDARY CONTAINMENT ABOVEGROUND TANK FOR FLAMMABLE LIQUIDS".

ESTIMATED EMPTY TANK WEIGHT: 9,200#

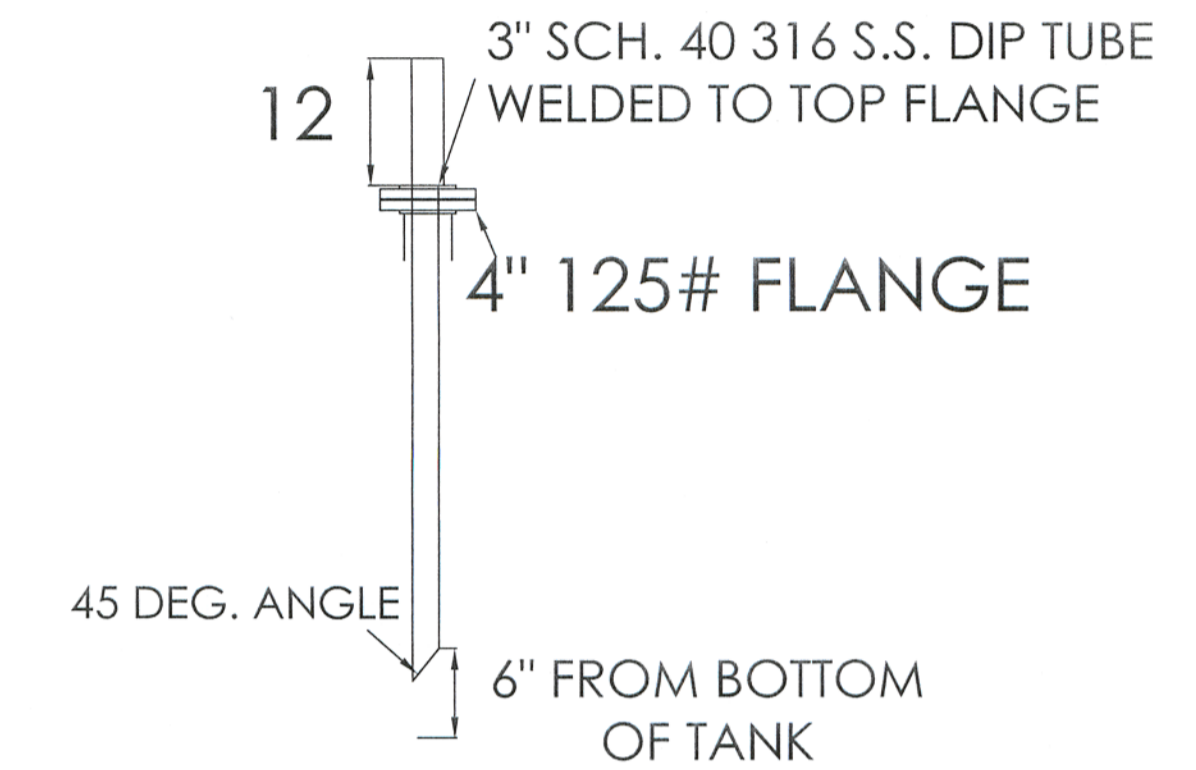
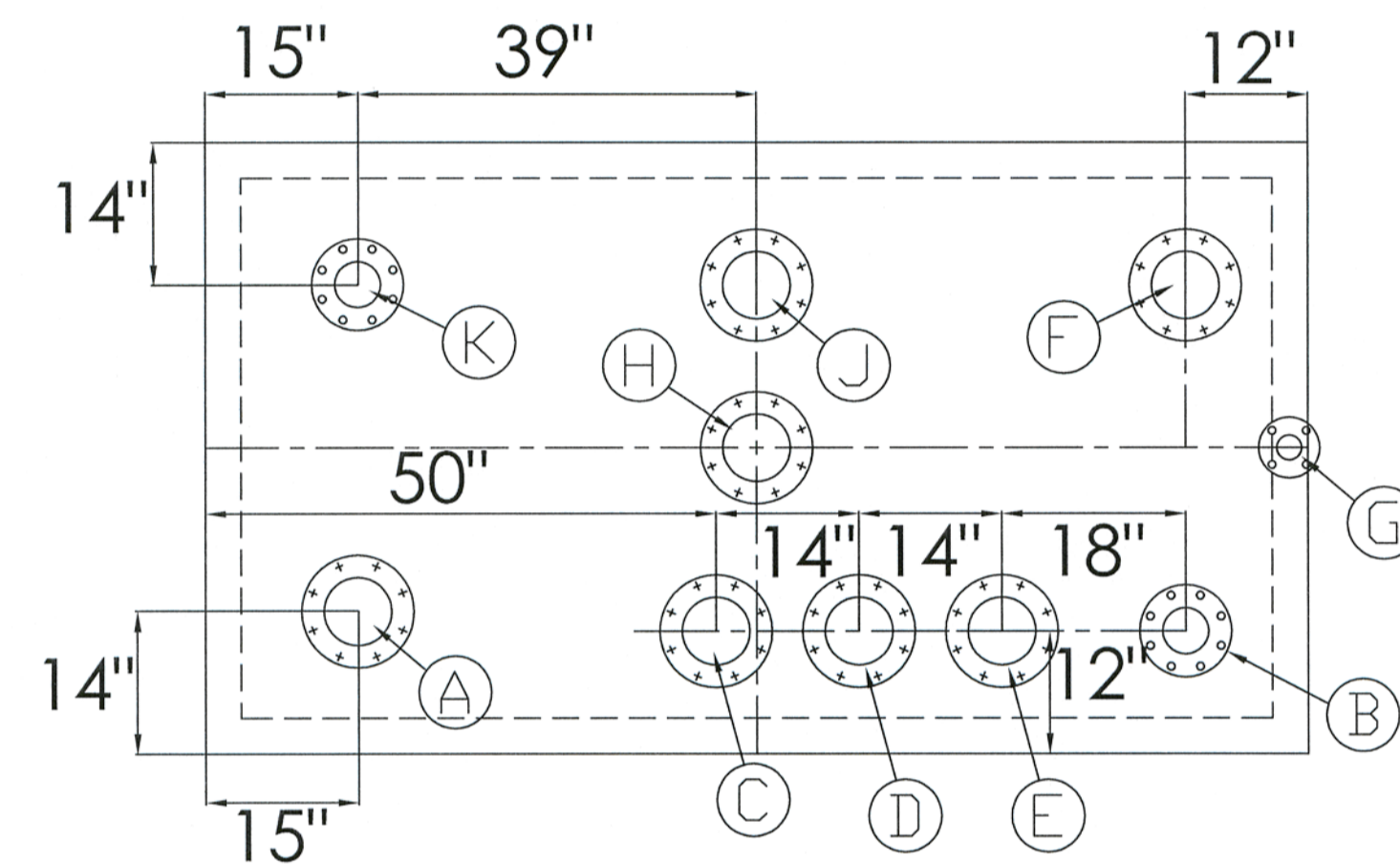
CARB EXECUTIVE ORDER VR-302-C

**PAINT NOTES**

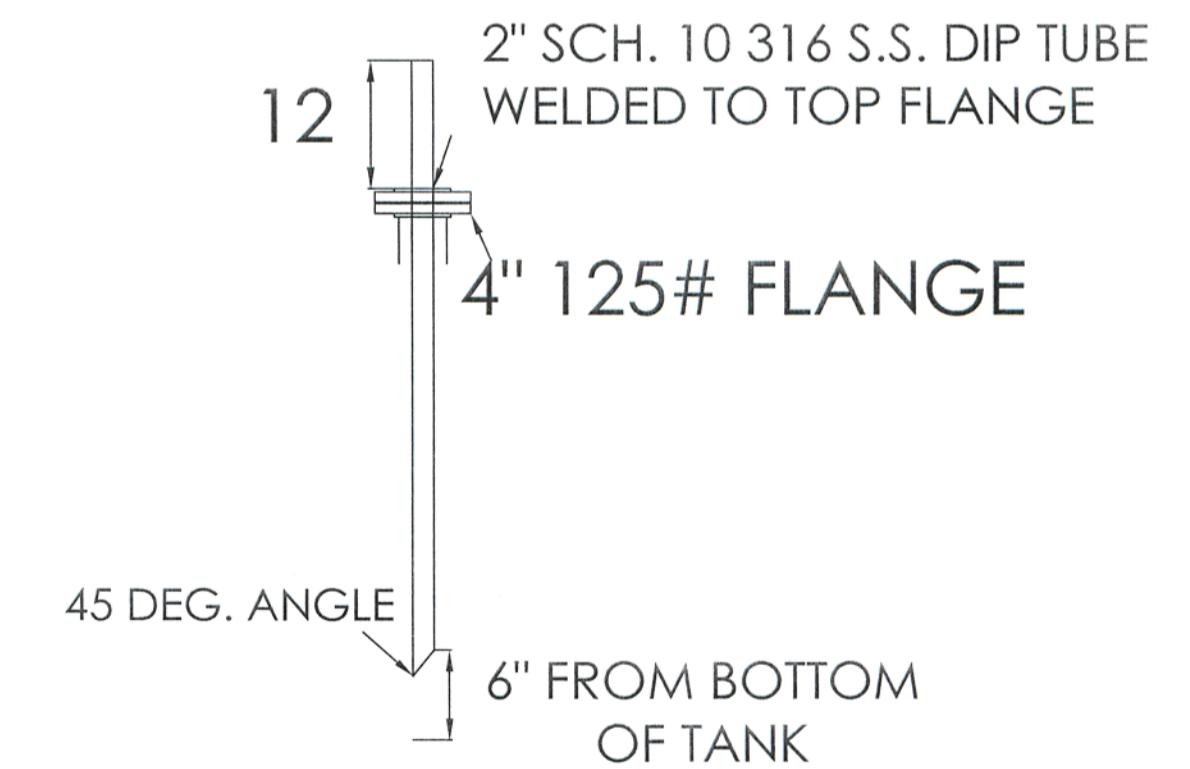
INTERIOR: BARE, CLEAN OF DEBRIS

EXTERIOR: WHITE POLYURETHANE

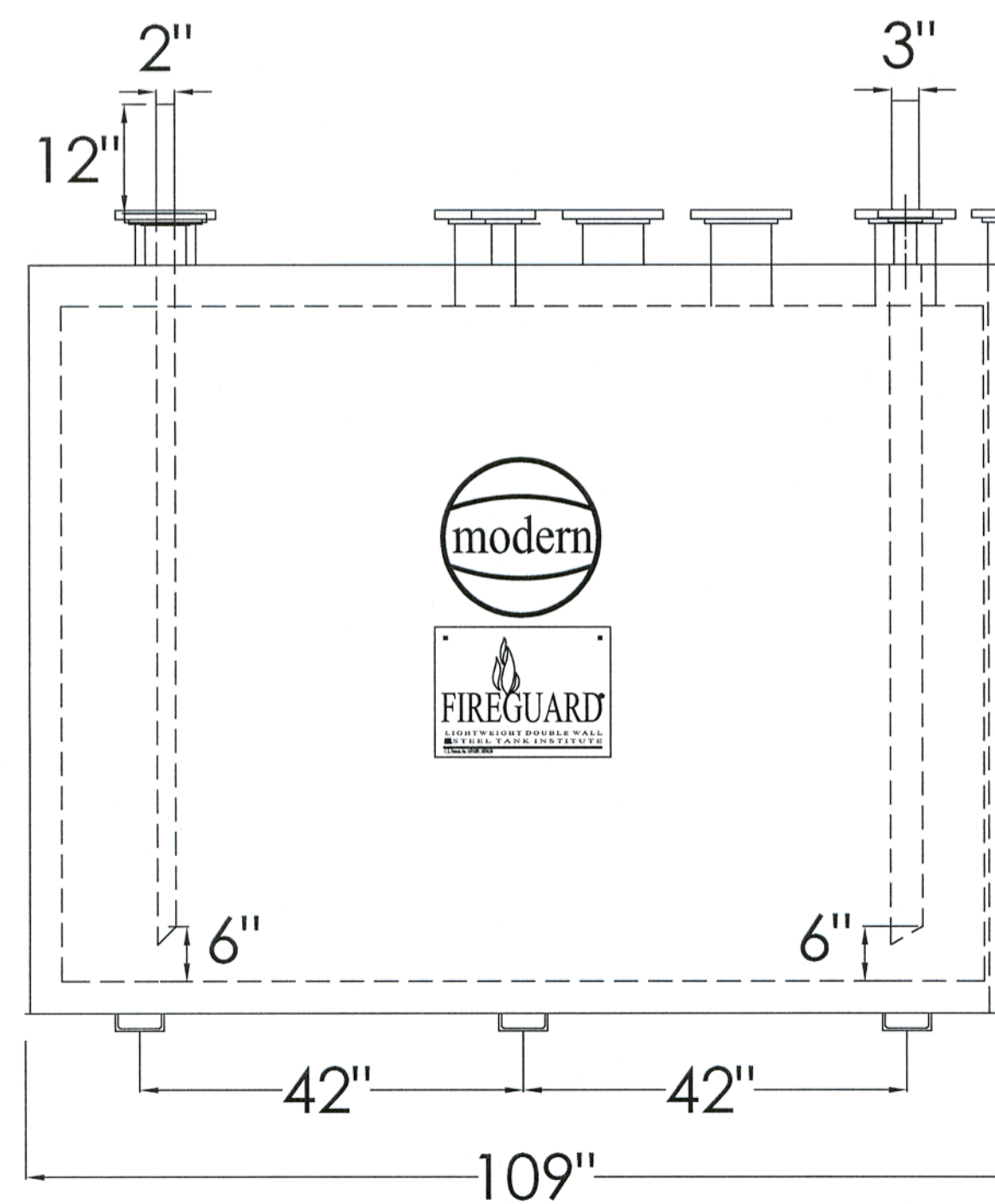
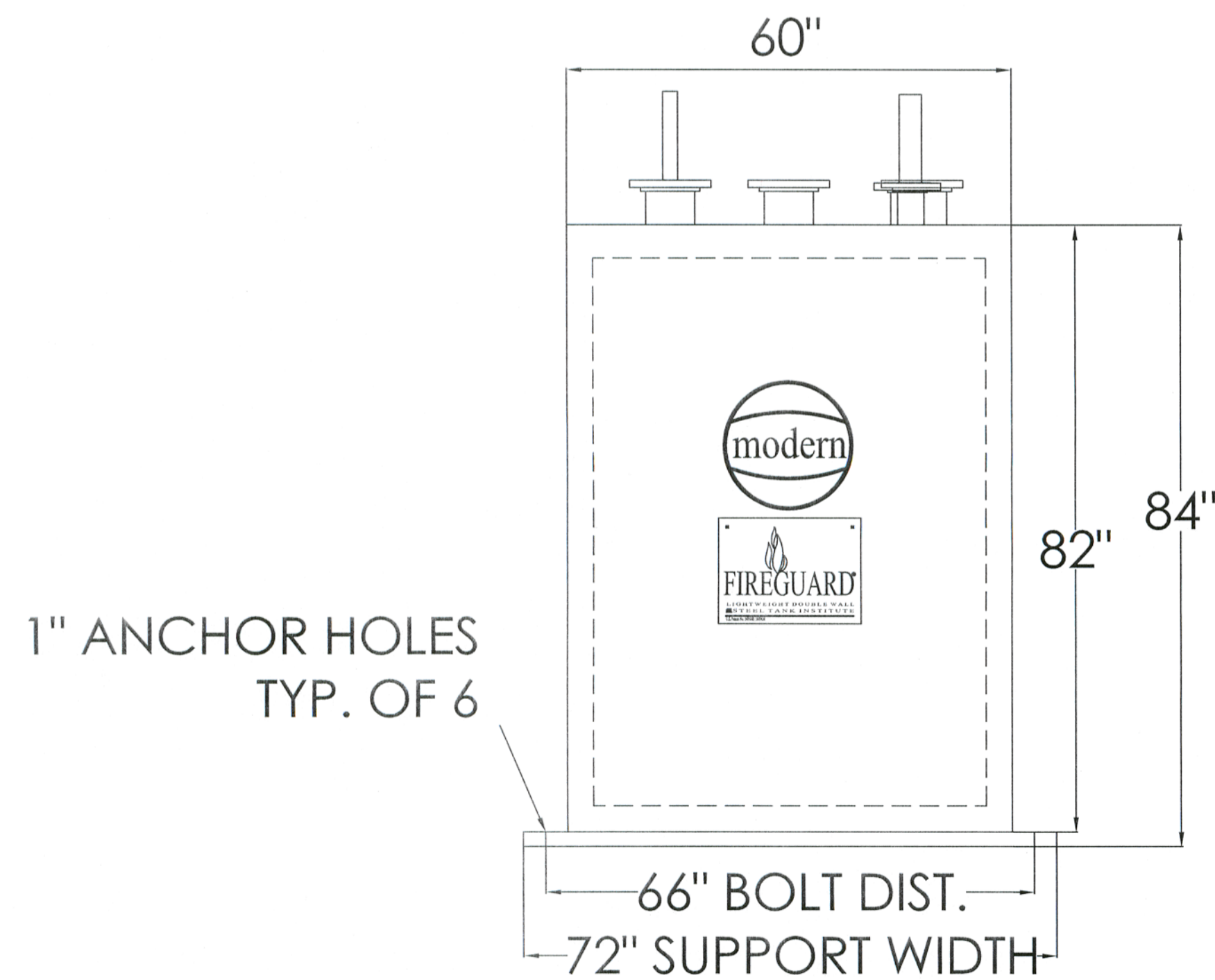
NOTE: PRIMARY TANK AND OPENINGS OF 316L STAINLESS STEEL



FITTING "B" DETAIL



FITTING "K" DETAIL



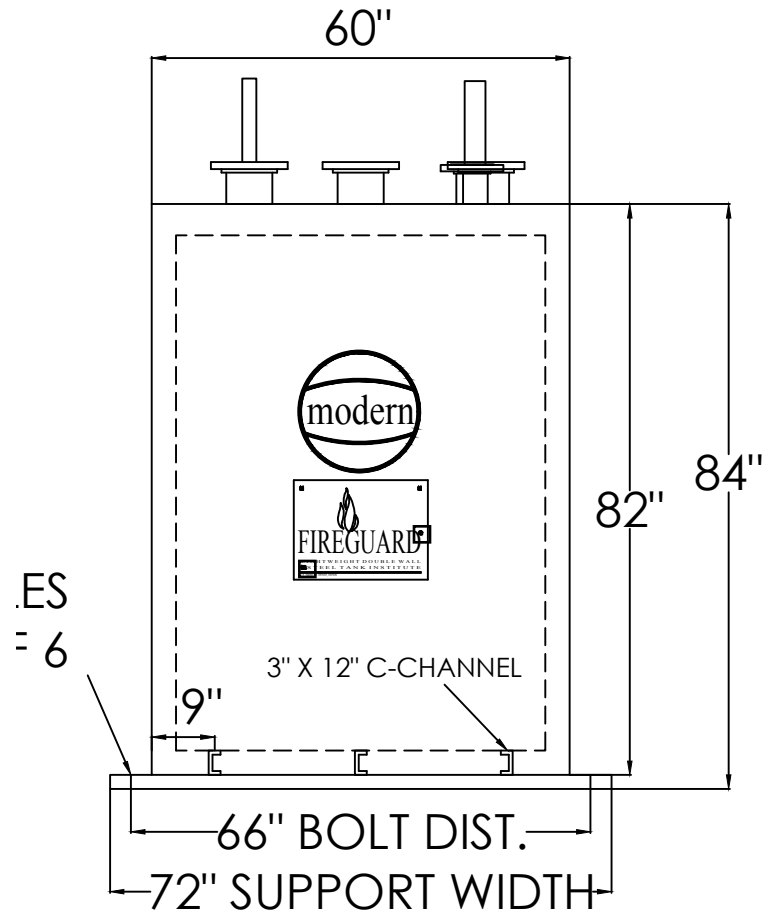
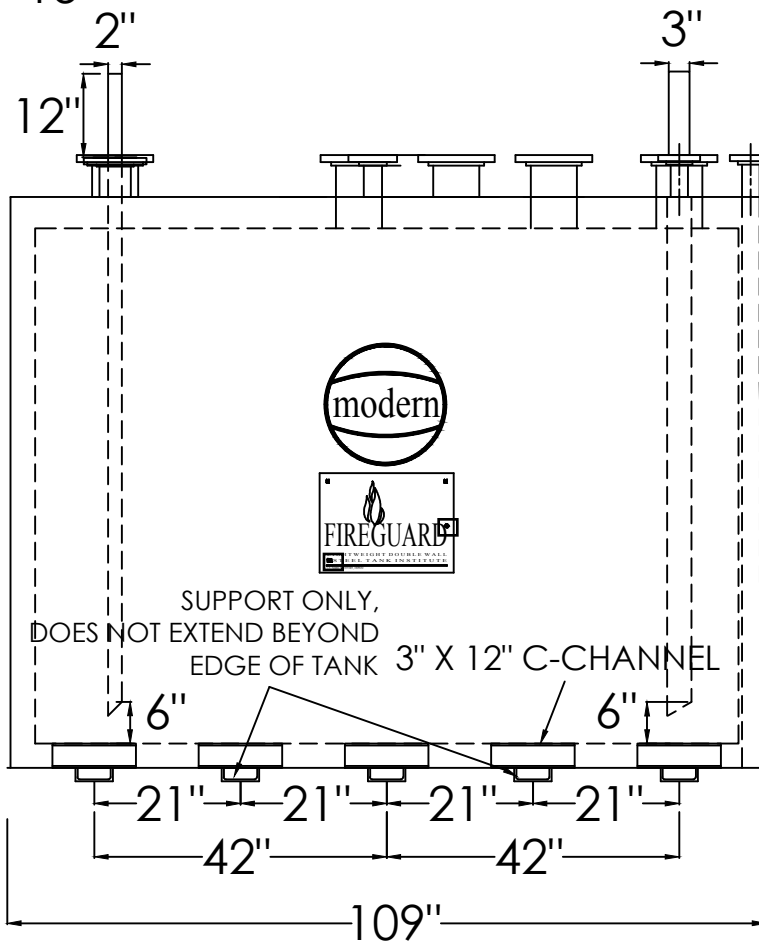
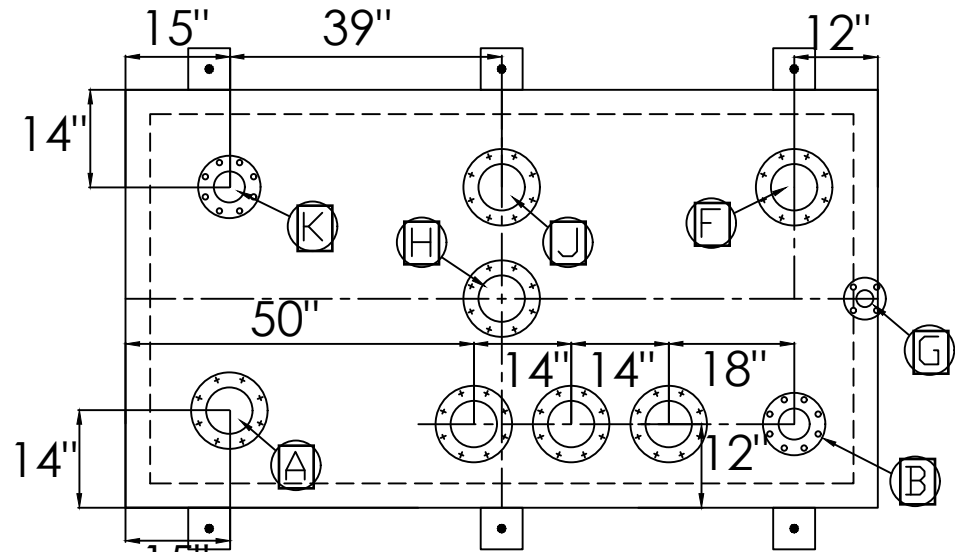
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| DOCUMENT/SUBMITTAL REVIEW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                    |
| SUBMITTAL # 1700G UL 2085 FIREGUARD TANK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                    |
| <input checked="" type="checkbox"/> REVIEWED - NO COMMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> REVIEWED - COMMENTS NOTED |
| <input type="checkbox"/> REJECTED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/> REVISE AND RESUBMIT       |
| <input type="checkbox"/> SUBMIT SPECIFIED ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                    |
| <small>Reviewer is only for general conformance with the design concept of the project and the general compliance with the information given in the contract documents and shall not in any way relieve contractor from compliance with the requirements of the drawings and specifications. Contractor is responsible for dimensions, weights, and quantities which shall be confirmed and certified at the jobsite. Contractor is responsible for hazardous process and techniques of construction, coordination of his work and that of other trades, and safe and satisfactory performance of his work.</small> |                                                    |
| INTEGRATED ENGINEERING SERVICES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |
| By:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Date: 10/18/16                                     |



PLAN OF DEBRIS

POLYURETHANE

TANK AND OPENINGS  
IS STEEL



ES = 6

PRODUCT DESCRIPTION

**ACTIVATED CARBON CANISTER  
VAPOR PHASE FOR VOC REMOVAL**

| Model:                                      | <b>G-1S</b>                                                                                                                   | <b>G-2S</b> | <b>G-3S</b> |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|
| Design Flow (CFM):                          | 100                                                                                                                           | 300         | 500         |
| Design Features:                            |                                                                                                                               |             |             |
| Pressure Drop at<br>Design Flow (in. w.c.): | 3.5                                                                                                                           | 4.25        | 5.0         |
| Carbon Weight (lbs.):                       | 200                                                                                                                           | 170         | 140         |
| Carbon                                      | Vapor phase activated carbon, high activity.                                                                                  |             |             |
| Canister:                                   | 24"Ø X 34" high epoxy lined carbon steel drum.<br>PVC internal piping. Acceptable for transport of<br>hazardous spent carbon. |             |             |
| Maximum Operating Pressure                  | 10 psi                                                                                                                        | 10 psi      | 10 psi      |
| Connections:                                | Inlet and outlet couplings located in lid. 3/4" side<br>bung drain.                                                           |             |             |
| Inlet & Outlet Size:                        | 2" FPT                                                                                                                        | 4" FPT      | 4" FPT      |
| Shipping Weight (lbs.):                     | 250                                                                                                                           | 220         | 190         |
| Availability:                               | 2 days                                                                                                                        |             |             |
| Drawing Number:                             | S-1113                                                                                                                        | S-1114      | S-1115      |

**San José-Santa Clara  
Regional Wastewater Facility  
Industrial Wastewater Discharge Permit**

|                                       |        |
|---------------------------------------|--------|
| Average Daily Process Flow in gal/day | 41,352 |
|---------------------------------------|--------|

PERMIT NO: SC-461B

EFFECTIVE DATE: 11/20/2020

EXPIRATION DATE: 11/19/2025

DATE OF ISSUE: 11/19/2020

NAME OF COMPANY: APPLE, INC.

MAILING ADDRESS: One Apple Park Way  
Cupertino, CA 95014

DISCHARGE ADDRESS: 3250 Scott Blvd., Santa Clara, CA 95054

EPA CATEGORY: Electrical and Electronic Components - Semiconductor - New Source

(Under 40 CFR) 40 CFR 469 Subpart A

SIC NO: 3571

This Permit is issued under authority established in the Santa Clara City Code, Chapter 13, Section 10.420, "Mandatory Wastewater Discharge Permits." It is the duty of the permittee to comply with all applicable federal, state, and local laws, whether expressly stated in this permit or not.

**All spills, upsets, slugs, bypasses, and or accidental discharges into the storm or sanitary sewer must be reported immediately to the San José-Santa Clara Regional Wastewater Facility at 408-945-3000.**

# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## A. 1 FEDERAL DISCHARGE CONDITIONS

The San José-Santa Clara Regional Wastewater Facility intends, but is not obligated, to conduct the following monitoring.

| Sample Point 01 - Final Discharge |                         |                         |                              |                  |                      |
|-----------------------------------|-------------------------|-------------------------|------------------------------|------------------|----------------------|
| Pollutant                         | Federal Daily Min. S.U. | Federal Daily Max. mg/L | Federal Monthly Average mg/L | City Sample Type | Monitoring Frequency |
| pH                                | 5.0                     |                         |                              | GRAB             | Semiannual           |
| TTO-F                             |                         | 1.37                    |                              | GRAB             | Semiannual           |

The Total Toxic Organic compounds applicable to your facility are listed at 40 CFR 469 Subpart A.

Compliance with the discharge limit for Total Toxic Organics (TTOs) is determined by the sum of Total Toxic Organic compounds for the Federal Categorical Standard(s) applicable to your facility, listed in the attached table, and which are found to be present in the discharge at a concentration greater than ten (10) micrograms per liter. For Total Toxic Organics, the method detection limit must be 0.010 mg/L or less.

**Compliance with the conditions of this permit shall be determined using all applicable limits**

The Federal limits set forth above are:

- Concentration Based or discharges prohibited in 40 CFR 403.5
- Production Based
- Calculated using the Combined Wastestream Formula as specified in 40 CFR 403.6  
See calculations on the next page.

# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## Federal 469.12 List of Total Toxic Organics

The term "Total toxic organics (TTO)" means the sum of the concentrations for each of the following toxic organic compounds which is found in the discharge at a concentration greater than ten (10) micrograms per liter:

|                              |                        |
|------------------------------|------------------------|
| 1,2,4 Trichlorobenzene       | 2,4,6 Trichlorophenol  |
| Chloroform                   | Carbon Tetrachloride   |
| 1,2 Dichlorobenzene          | 1,2 Dichloroethane     |
| 1,3 Dichlorobenzene          | 1,1,2 Trichloroethane  |
| 1,4 Dichlorobenzene          | Dichlorobromomethane   |
| Ethylbenzene                 | Pentachlorophenol      |
| 1,1,1 Trichloroethane        | Di-n-butyl phthalate   |
| Methylene Chloride           | 4 Nitrophenol          |
| Naphthalene                  | Anthracene             |
| 2 Nitrophenol                | 1,2 Diphenylhydrazine  |
| Bis (2-ethylhexyl) phthalate | Isophorone             |
| Tetrachloroethylene          | Butyl benzyl phthalate |
| Toluene                      | 1,1 Dichloroethylene   |
| Trichloroethylene            | 2,4 Dichlorophenol     |
| 2 Chlorophenol               | Phenol                 |

## San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

### A. 2 LOCAL DISCHARGE CONDITIONS-INTERFERING SUBSTANCES AND AVERAGE LIMITS

The San José-Santa Clara Regional Wastewater Facility intends, but is not obligated, to conduct the following monitoring.

| <b>Sample Point 01- Final Discharge</b> |             |                      |                      |                             |
|-----------------------------------------|-------------|----------------------|----------------------|-----------------------------|
| <b>Pollutant</b>                        | <b>Unit</b> | <b>Daily Minimum</b> | <b>Daily Maximum</b> | <b>Monitoring Frequency</b> |
| Antimony                                | mg/L        |                      | 5.0                  |                             |
| Arsenic                                 | mg/L        |                      | 1.0                  | Semiannual                  |
| Beryllium                               | mg/L        |                      | 0.75                 |                             |
| Cadmium                                 | mg/L        |                      | 0.70                 |                             |
| Chromium Total                          | mg/L        |                      | 1.0                  | Semiannual                  |
| Copper                                  | mg/L        |                      | 2.3                  | Semiannual                  |
| Cyanide Total                           | mg/L        |                      | 0.50                 |                             |
| Lead                                    | mg/L        |                      | 0.4                  |                             |
| Mercury                                 | mg/L        |                      | 0.010                |                             |
| Nickel                                  | mg/L        |                      | 0.5                  | Semiannual                  |
| Oil and Grease                          | mg/L        |                      | 150                  |                             |
| pH                                      | S.U.        | 6.0                  | <12.5                | Semiannual                  |
| Phenols                                 | mg/L        |                      | 30.0                 |                             |
| Selenium                                | mg/L        |                      | 1.0                  |                             |
| Silver                                  | mg/L        |                      | 0.70                 | Semiannual                  |
| Zinc                                    | mg/L        |                      | 2.6                  | Semiannual                  |

- 1) Table reflects the regular frequency for scheduling and collecting Grab and Composite samples by the San José-Santa Clara Regional Wastewater Facility (RWF). The number, location, frequency, and types of samples collected may be changed at the discretion of the RWF.
- 2) Compliance with the local discharge limits for metals will be enforced using Composite or Grab samples.
- 3) The use of Diluting Waters as a partial or complete substitute for adequate treatment, to achieve compliance, or to meet any limitations set forth for wastewater, or to minimize any requirement imposed in a Wastewater Discharge Permit is prohibited.

**Compliance with the conditions of this permit  
shall be determined using all applicable limits**

# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## B. SELF-MONITORING REQUIREMENTS

Any deviation from sampling or analysis protocols specified in this Permit or local, state, or federal code, or any violation of a condition of this Permit may result in the revocation of this Permit.

All wastewater pretreatment and monitoring equipment shall be properly operated and maintained in proper working condition.

Where pretreatment does not exist, all industrial wastewater shall be plumbed in such a way that a sample may be obtained after the process which generates the regulated wastestream, but prior to connection to the sanitary sewer system and prior to the introduction of any non-regulated or dilution flows.

If sampling performed for self-monitoring indicates a violation, the San José-Santa Clara Regional Wastewater Facility must be notified within 24 hours of the permittee becoming aware of the violation. The Permittee must resample, analyze the samples, and submit the resampling results to the San José-Santa Clara Regional Wastewater Facility within 30 days of becoming aware of a violation. A laboratory certified by the California Department of Health Services shall perform testing in accordance with 40 CFR 136.

### B.1 SELF-MONITORING REPORTING REQUIREMENTS

All self-monitoring information shall be reported on the standard Self-Monitoring Reporting form, which may be obtained by contacting San José-Santa Clara Regional Wastewater Facility. Reports shall be mailed or delivered to the following address, on or before the reporting deadline(s) specified below, and shall be addressed to the Source Control Inspector assigned to the permittee's facility.

Environmental Services Department  
Source Control  
200 E Santa Clara St, 7<sup>th</sup> Floor  
San Jose, CA 95113-1905

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| X | <p>All required self-monitoring reporting shall be submitted by the last day of the following reporting months, each year the Permit is in effect: <b>MARCH AND SEPTEMBER</b></p> <ul style="list-style-type: none"><li>• For the SMR due on the last day of March, the reporting period is from the first day of September <u>in the previous year</u> to the last day of February <u>in the current year</u>.</li><li>• For the SMR due on the last day of September, the reporting period is from the first day of March <u>in the current year</u> to the last day of August <u>in the current year</u>.</li></ul> |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

The following shall be submitted with each Self-Monitoring Report:

|   |                                                                                                                                                                                                                                                                                                                                         |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| X | Average daily flow in gallons/day                                                                                                                                                                                                                                                                                                       |
| X | Maximum daily flow in gallons/day                                                                                                                                                                                                                                                                                                       |
| X | Results of Part B.2 of this permit                                                                                                                                                                                                                                                                                                      |
|   | Water bills for reporting period                                                                                                                                                                                                                                                                                                        |
| X | Copies of daily flowmeter totalizer readings                                                                                                                                                                                                                                                                                            |
| X | Verification of effluent flowmeter calibration must be submitted annually from the date of initial calibration with the <b>September</b> Self-Monitoring Report                                                                                                                                                                         |
| X | Documentation of calculations for reported water use values                                                                                                                                                                                                                                                                             |
|   | Waste manifests for reporting period                                                                                                                                                                                                                                                                                                    |
|   | pH recorder charts                                                                                                                                                                                                                                                                                                                      |
|   | Average production volume in _____ (units produced) per                                                                                                                                                                                                                                                                                 |
| X | Copies of self-monitoring analytical results, detection limits, documentation of the method used, and chain of custody, shall be submitted with the permittee's Self-Monitoring Report.                                                                                                                                                 |
| X | If the permittee monitors any pollutant required to be monitored in Part B.2 of this permit more frequently than required by this permit, using collection and analytical methods specified in 40 CFR 136, the result of this monitoring shall be included in the permittee's Self-Monitoring Report pursuant to 40 CFR 403.12 (g) (5). |
| X | Documentation of the laboratory's quality assurance/quality control (QA/QC) shall be provided with the self-monitoring test results.                                                                                                                                                                                                    |

**COMMENTS:**

In the event that the permittee anticipates an average daily production or average daily flow increase or decrease of 20% or more for a period of more than 60 calendar days, the permittee shall notify the Director of Environmental Services in writing prior to the change.



# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## B.2 SELF-MONITORING REQUIREMENTS-INTERFERING SUBSTANCES

|          |                                                                                                                                                                                                                                                                   |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>X</b> | Samples shall be collected at the following sample point using methods specified in 40 CFR 136: Located along the discharge pipe after the acid waste neutralization system, after all treatment, and immediately prior to final discharge to the sanitary sewer. |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Pollutant        | Monitoring Frequency | Sampling Type* |
|------------------|----------------------|----------------|
| Arsenic          | Semiannual           | GRAB           |
| Cadmium          |                      |                |
| Chromium Total   | Semiannual           | GRAB           |
| Copper           | Semiannual           | GRAB           |
| Cyanide Total    |                      |                |
| Cyanide Amenable |                      |                |
| Lead             |                      |                |

| Pollutant           | Monitoring Frequency | Sampling Type* |
|---------------------|----------------------|----------------|
| Mercury             |                      |                |
| Nickel              | Semiannual           | GRAB           |
| Oil and Grease      |                      |                |
| pH                  | Semiannual           | GRAB           |
| Silver              | Semiannual           | GRAB           |
| TTOs <sup>(1)</sup> | Semiannual           | GRAB           |
| Zinc                | Semiannual           | GRAB           |

\*A Sampling Type of COMP must be a Composite Sample.

<sup>(1)</sup> Total Toxic Organics Testing and Certification Requirements:

|          |                                                                                                                                                                                                                                                    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>X</b> | You must either sample for all applicable Total Toxic Organic compounds identified earlier in the included list(s) or certify that you have implemented a Toxic Organic Management Plan. All analyses must be performed per current EPA method(s). |
|          | Submit sample results for all Total Toxic Organic compounds with each Self-Monitoring Report.                                                                                                                                                      |
| <b>X</b> | Submit certification that a Toxic Organic Management Plan is being implemented with each Self-Monitoring Report.                                                                                                                                   |

COMMENTS: In the event that monitoring by the POTW or the permittee demonstrates a violation of the federal discharge standard for TTOs, the permittee may not certify in lieu of testing. The permittee shall sample **monthly** for those TTO compounds in violation until it is demonstrated that the Toxic Organic Management Plan is adequate to prevent further violations. The permittee shall continue to sample **monthly** until written notice removing this requirement is received from the San José-Santa Clara Regional Wastewater Facility.

## San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

### B.3 EQUIPMENT REQUIRED

|          |                                      |
|----------|--------------------------------------|
| <b>X</b> | <b>COMPOSITE SAMPLER</b>             |
| <b>X</b> | Capacity: <u>  2.5  </u> gallons     |
| <b>X</b> | Refrigerated to 4 degrees Centigrade |
|          | Flow proportional                    |
| <b>X</b> | Time proportional                    |

|          |                                            |                     |
|----------|--------------------------------------------|---------------------|
| <b>X</b> | <b>FLOW METER</b>                          |                     |
| <b>X</b> | Continuous non-resettable totalizing meter |                     |
|          | Influent                                   |                     |
| <b>X</b> | Effluent from pretreatment                 | With chart recorder |
|          | Influent dedicated to process              |                     |

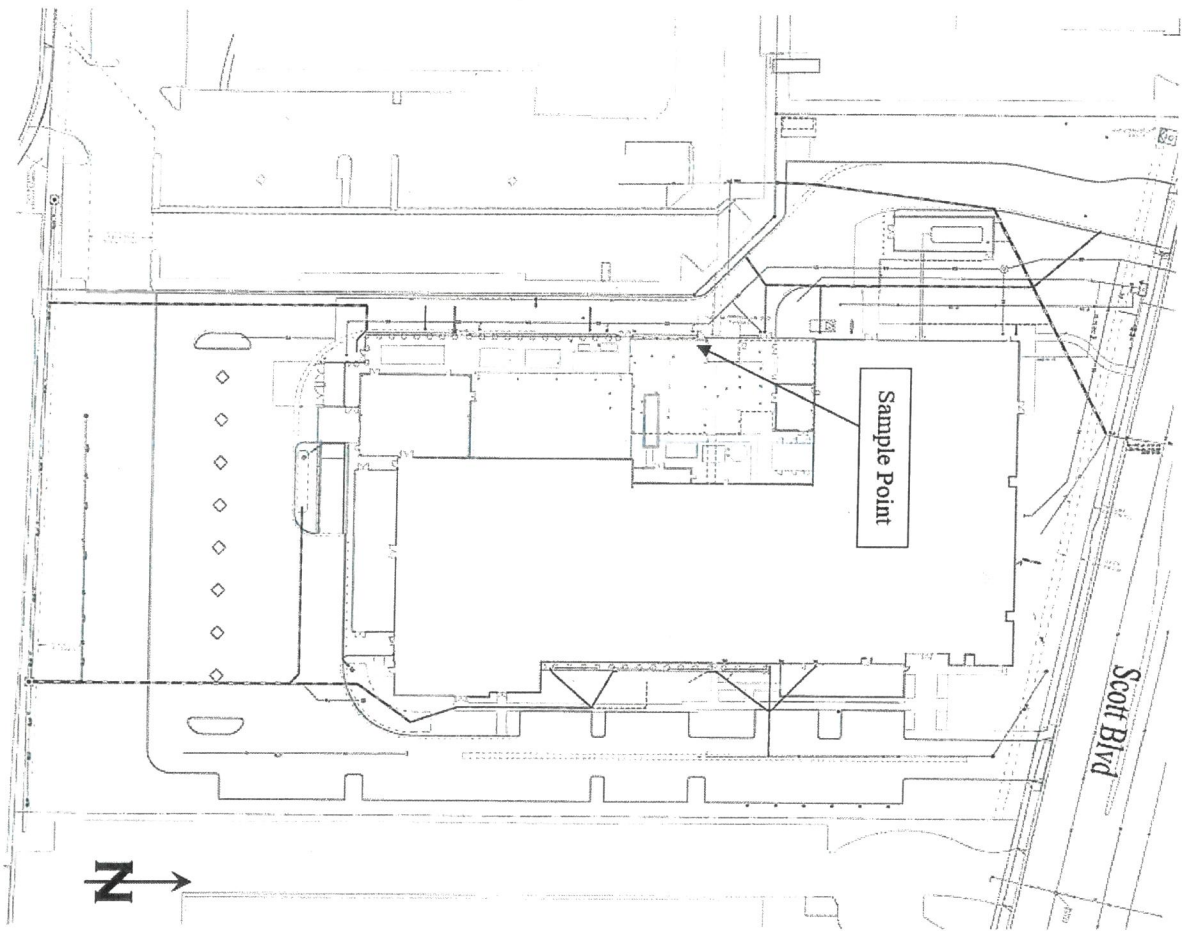
|          |                                            |
|----------|--------------------------------------------|
| <b>X</b> | <b>CONTINUOUS pH RECORDER (0-14 Scale)</b> |
|----------|--------------------------------------------|

|          |                                                                                 |
|----------|---------------------------------------------------------------------------------|
| <b>X</b> | <b>SAMPLING POINT (Clearly Labeled)</b>                                         |
| <b>X</b> | Minimum <u>  5  </u> gallons                                                    |
|          | Install within _____ days of the issuance date of this Permit                   |
| <b>X</b> | Clearly identified on a pretreatment plumbing diagram                           |
| <b>X</b> | Clearly identified on analytical results submitted with Self-Monitoring Reports |

|  |              |
|--|--------------|
|  | <b>OTHER</b> |
|--|--------------|

San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

APPLE, INC. SITE PLAN



# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## C. OTHER REQUIREMENTS

Within \_\_\_ days of Permit issuance, establish or install the following:

\_\_\_ A non-resettable effluent totalizing flow meter

\_\_\_ With recording capability

This flow meter shall be calibrated according to the manufacturer's recommendations. Documentation of calibration shall be submitted with the results of Part B.2 of this permit.

\_\_\_ A non-resettable influent totalizing flow meter dedicated to process.

\_\_\_ A method of accurate flow quantification with documentation approved by the Director of Environmental Services

|   |                                                                                                                                                                                                                                                                                                                                              |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Within 60 days of Permit issuance, a Waste Minimization Plan prepared in accordance with established guidelines must be submitted.                                                                                                                                                                                                           |
|   | Submit a Waste Minimization update annually in _____ of each year.                                                                                                                                                                                                                                                                           |
|   | Within 90 days of Permit issuance, a Solvent Management Plan prepared in accordance with established guidelines must be submitted. The permittee must certify that the Solvent Management Plan is being implemented.                                                                                                                         |
|   | Within 90 days of Permit issuance for first time permittees, or by _____ for current permittees, a plan for the prevention of Slug Discharges must be submitted. The plan shall be prepared in accordance with the guidelines set forth at 403.8 (f) (2) (v). The permittee must certify that the Slug Prevention Plan is being implemented. |
| X | In order to certify in lieu of testing for Total Toxic Organic compounds with each Self-monitoring Report, a Toxic Organic Management Plan prepared in accordance with established guidelines must be submitted and approved.                                                                                                                |
|   | See additional requirements attached.                                                                                                                                                                                                                                                                                                        |

## D. COMPLIANCE SCHEDULE

X None

\_\_\_ See compliance schedule established on \_\_\_\_\_.

# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## E. STIPULATIONS

### ACCIDENTAL DISCHARGE

The Permittee shall provide protection from accidental discharge of prohibited materials or other wastes regulated by City of Santa Clara Code Chapter 13.10 into either the storm sewer or sanitary sewer systems.

Facilities to prevent accidental discharge of prohibited materials shall be provided and maintained at the Permittee's expense.

The Permittee shall notify the San José-Santa Clara Regional Wastewater Facility, the City of San José Environmental Services Department, and the City of Santa Clara by telephone or in person within one (1) hour of becoming aware of accidentally discharging wastes of reportable quantities as determined in 40 CFR 117 or discharge of any substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261, to enable countermeasures to be taken by the San José-Santa Clara Regional Wastewater Facility and the City of San José Environmental Services Department to minimize damage to the sanitary sewer system, plant, treatment processes, and the receiving waters. If hazardous waste is discharged, the Permittee shall be subject to all requirements in 40 CFR 403.12(p).

Permittee telephone notification shall be followed, within five (5) days of the date of occurrence, by a detailed written statement describing the causes of the accidental discharge and the measures being taken to prevent future occurrences.

Notification to the City will not relieve the Permittee of notification requirements under any other federal, state or local law, nor of liability for any expense, loss or damage to the sanitary sewer system, Plant or treatment process or receiving waters or for any fines or penalties imposed on the City of San José Environmental Services Department and the City of Santa Clara on account thereof under applicable provisions of state or federal law.

The Permittee must maintain a spill control plan for protection against accidental discharges, including but not limited to, berming of chemicals and waste materials. The review of such plans and procedures shall not relieve the Permittee from the responsibility of modifying the facility as necessary to provide the protection necessary to meet the requirements of City of Santa Clara Code Chapter 13.10 or other state or federal regulations.

The plan must be reviewed and revised as needed within thirty (30) days after an accidental discharge has occurred or as required by the director.

### APPLICABLE PENALTIES

Any person who intentionally or negligently violates any provisions of the Permit issued, or who intentionally or negligently discharges waste or wastewater which causes pollution, or violates any effluent limitation, National Standard of Performance, or National Pretreatment or Toxicity Standard, may be civilly liable to the City for a sum of up to Ten Thousand Dollars (\$10,000) for the first day in which such violation occurs, up to Twenty-Five Thousand Dollars (\$25,000) for the second day in which such violation occurs and Fifty Thousand Dollars (\$50,000) for each additional day. Any violation of the local daily maximum discharge conditions, or any other violation of the Santa Clara Sewer Use Ordinance (Santa Clara City Code, Section 13.10 et seq.) is punishable by a fine of up to One Thousand Dollars (\$1,000.00) or imprisonment in the city or county jail for a period of up to (6) six months, or both such fine and imprisonment. Each day such violation

## San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

continues is a separate offense. Violation of any of the provisions of this Permit or the falsification or misrepresentation of information by the Permittee may constitute a violation of local, state or federal law and may result in the revocation of the Permit and the issuance of a Cease and Desist Order.

### BYPASS PROHIBITION AND PROVISIONS

“Bypass” means the intentional diversion of wastestreams from any portion of a Permittee’s treatment facility.

A Bypass is prohibited, and the City of San José Environmental Services Department and City of Santa Clara may take enforcement action against a Permittee for a bypass, unless;

- A. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, i.e., substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;
- B. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
- C. The Permittee submitted notices as required by the following:

#### *Notice of Bypass*

- 1. If a Permittee knows in advance of the need for a bypass, the Permittee shall submit prior notice to the City of San José Environmental Services Department, if possible at least ten days before the date of the bypass.
- 2. A Permittee shall submit oral notice of an unanticipated bypass that exceeds applicable Pretreatment Standards to the City of San José Environmental Services Department and San José-Santa Clara Regional Wastewater Facility within 24 hours from the time the Permittee becomes aware of the bypass. A written submission shall also be provided within five days of the time the Permittee becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

The Director of the Environmental Services Department may approve an anticipated bypass, after considering its adverse effects, if the Director determines that the bypass will meet the three conditions A through C.

### COMPOSITE SAMPLE

A composite sample must represent the discharge from a production day. The Permittee shall collect composite samples over the part of the day when wastewater is being discharged.

# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## DUTY TO MITIGATE

The Permittee shall mitigate or take all reasonable measures to lessen the duration and severity of any Permit violation.

## TRANSFERABILITY

Wastewater Discharge Permits are issued to a specific user for a specific operation. This Wastewater Discharge Permit shall not be reassigned, transferred, or sold to a new owner or user or used on premises for facilities or operations not covered by the permit without prior approval of the Director.

Wastewater Discharge Permits may be transferred to a new owner or operator only if the permittee provides advance written notice to the Director and the Director approves the Wastewater Discharge Permit transfer. The notice to the Director must include a certification by the new owner or operator which:

- A. States that the new owner and/or operator has no immediate intent to change the facility's operations and processes;
- B. Identifies the specific date on which the transfer is to occur; and
- C. Acknowledges full responsibility for complying with the existing individual wastewater discharge permit.

Failure to provide advance notice of a transfer renders the Wastewater Discharge Permit void as of the date of facility transfer.

Upon an approved transfer, the existing owner or operator shall provide a copy of this Wastewater Discharge Permit to the new owner or operator. The new owner or operator shall submit a Wastewater Discharge Permit Application and appropriate permit application fee to the City of San José Environmental Service Department within 30 days of the date of the approved transfer.

## NOTIFICATION OF CHANGE

The Permittee shall promptly notify the City of San José Environmental Services Department of any significant change in quantity or quality of the discharge as reported in the Permit application. In the event of such change, a new application will be required. Notification of such change shall be provided to the City of San José Environmental Services Department at least 30 days prior to such change.

"Significant Change" includes but is not limited to, any change in a Permittee's operation that results in any of the following:

- A. An increase or decrease in annual average process flow of twenty-five percent (25%) over the standard discharger's average process flow for the Permittee's most immediate preceding twelve (12) months.
- B. An increase or decrease in annual average process flow that results in a change from low flow discharger to standard discharger or from standard discharger to low flow discharger.

## San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

- C. An increase or decrease in annual average process flow that results in a change from non-significant industrial user to significant industrial user or from significant industrial user to non-significant industrial user.
- D. An increase or decrease in annual production rate of twenty-five percent (25%) for any Permittee subject to production-based limits over the Permittee's production rate for the most immediately preceding twelve (12) months.
- E. Adding or deleting process discharge or sample points.
- F. Waiver of monitoring requirements for any pollutant not present.

### NOTIFICATION OF DISPOSAL

Within 180 days of the commencement of discharge to the sanitary sewer of any substance which, if otherwise disposed of would be a hazardous waste under 40 CFR 261, the Permittee shall notify the EPA, the State, the San José-Santa Clara Regional Wastewater Facility and the City of San José Environmental Services Department of the discharge of these wastes, and anticipated discharges of these wastes over a calendar month and a calendar year. This reporting does not apply to the discharge of less than 15 kilograms per month unless the wastes are "acutely hazardous" wastes, as specified in 40 CFR 261.30(d) and 261.33(e).

### NOTIFICATION OF SLUG LOADING

A Slug Discharge is any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge, which has a reasonable potential to cause interference or pass through, or in any other way violate the San José-Santa Clara Regional Wastewater Facility's regulations, local limits, or National Pollutant Discharge Elimination System Permit conditions. The results of such activities shall be available to the City of San José Environmental Services Department upon request.

A Permittee that is also a Significant Industrial User is required to notify the City of San José Environmental Services immediately of any changes at its facility affecting the potential for a Slug Discharge. If the City of San José Environmental Services decides that a slug discharge control plan is required, the plan shall contain, at a minimum, the following elements:

- A. Description of discharge practices, including non-routine batch discharges;
- B. Description of stored chemicals;
- C. Procedures for immediately notifying the San José-Santa Clara Regional Wastewater Facility of slug discharges, including any discharge that would violate a prohibition under § 403.5(b) with procedures for follow-up written notification within five days;
- D. If necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.



# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## POWER TO INSPECT

The City of San José Director of the Environmental Services Department and other duly authorized employees and agents of the City of San José Environmental Services Department or other representative City of Santa Clara personnel bearing credentials and identification shall have the right to access upon all properties for the purpose of inspecting any sewer or storm drain connection, including all discharge connections of roof and surface drains and plumbing fixtures; inspecting, observing, measuring, photographing, sampling, and testing the quality, consistency, and characteristics of sewage and industrial wastewaters being discharged into any public sewer or natural outlet; and inspecting and copying any records relating to quantity and quality of wastewater discharges, including but not limited to water usage and effluent discharged, chemical usage, and hazardous waste records.

The City of San José Director of the Environmental Services Department and the City of Santa Clara may terminate service or revoke the Permit of any person who has discharged wastewater to the sanitary sewer system and has unreasonably refused access to the representatives and agents of the City, as described in this stipulation.

## PROHIBITED SUBSTANCES

Permittee shall comply with discharge prohibitions set forth in Santa Clara City Code, Chapter 13.10, which contains sections which prohibit the discharge of several substances and a number of additional types of pollutants. It is the duty of the permittee to become acquainted with these prohibitions, and to take all reasonable measures to assure that no violations of the prohibitions in Chapter 13.10 occur as a direct or indirect result of the permittee's activities or discharge.

## RECORD KEEPING

All submitted and onsite records shall be retained for a minimum of three years. This period shall be automatically extended for the duration of any enforcement action concerning the Permittee, or where the Permittee has been specifically notified of a longer retention period as required by the Director of the City of San José Environmental Services Department. Such records shall be available for inspection and copying by the City of San José Director of the Environmental Services Department, and other duly authorized employees and agents of the City of San José Environmental Services Department or other representative City of Santa Clara personnel bearing credentials and identification. Records shall include the date, exact place, method and time of sampling and the names of the person or persons taking the sample, the dates analysis were performed, the name of person(s) who performed the analysis, quality assurance and quality control data, the analytical techniques/methods used, and the results of such analysis.

## SEVERABILITY

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is held invalid, the application of such provisions to other circumstances, and the remainder of this Permit, shall not be affected thereby.

## SLUDGE AND HAZARDOUS WASTE DISPOSAL

The Permittee shall properly dispose of pretreatment or other sludge and any hazardous wastes (e.g., spent chemicals) used or generated at the Permittee's facility so as to prevent the discharge of such materials to the San José-Santa Clara Regional Wastewater Facility or sanitary sewer.

# San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

## SIGNATORY REQUIREMENTS

Any reports submitted pursuant to Part B. 2 or Part C, or as Notification per these Stipulations of this Permit shall be signed as follows:

- A. By a responsible corporate officer if the Permittee submitting the reports is a corporation. For the purposes of this Permit, a responsible corporate officer shall be defined as (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation or, (2) the manager of one or more manufacturing, production, or operation facilities, who is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for Permit requirements, if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- B. By a general partner or proprietor if the Permittee submitting the reports is a partnership or sole proprietorship respectively.
- C. By a duly authorized representative of the responsible corporate officer, general partner or proprietor, when that authorization is made in writing and submitted with the report to the City of San José Environmental Services Department. The authorization shall specify either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, or having overall responsibility for environmental matters for the company. If an authorization under this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of this section must be submitted to the City of San José Environmental Services Department prior to or together with any reports to be signed by an authorized representative.

## SUBMISSION OF PERMIT APPLICATION

**Unless otherwise specified in the conditions of the existing Permit, a new Permit application must be submitted at least ninety (90) days prior to (1) commencing discharge to the sanitary system, (2) commencing operation of a zero discharging categorical process, or (3) expiration of existing discharge permit and must be accompanied by the appropriate fees.**

## TERMINATION OF SERVICE, REVOCATION AND PERMIT MODIFICATION

Pursuant to Chapter 13.10 of the Santa Clara City Code, the City of Santa Clara Director of Water and Sewer Utilities and the City of San Jose Director of Environmental Services, City of Santa Clara may modify the Permit with thirty days written notice to the permittee, revoke the Permit with ten days written notice to the permittee, and/or suspend service if the permittee uses the sanitary sewer in a manner or way that endangers the public health or safety, or public or private property. If such endangerment is imminent, or for any other reason the City of Santa Clara Director of Water

## San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

and Sewer Utilities and the City of San José Director of Environmental Services deems sufficient cause, the City of Santa Clara Director of Water and Sewer Utilities and the City of San José Director of Environmental Services may act to suspend service immediately.

### UPSET

“Upset” means an unintentional and temporary noncompliance with categorical pretreatment standards because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

### UPSET - REBUTTAL

The following circumstances may be raised as an affirmative defense to an action brought for noncompliance with categorical pretreatment standards:

- A. The Permittee can demonstrate through properly signed, contemporaneous operating logs, or other relevant evidence that:
  1. The Permittee can identify the cause(s) of the Upset;
  2. When the upset occurred, the facility was being operated in a prudent and workman-like manner, and in compliance with applicable operation and maintenance procedures;
  3. The Permittee has submitted the following information to the City of San José Environmental Services Department:
    - a. A description of the discharge to the San José-Santa Clara Regional Wastewater Facility or sanitary sewer and the cause of the noncompliance;
    - b. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue: and
    - c. Steps being taken and/or planned to be taken to reduce, eliminate and prevent recurrence of the noncompliance.
  4. The Permittee shall report the information specified in subsection A.3 to the City of San José Director of Environmental Services or designee within twenty-four (24) hours of becoming aware of the Upset, and provide written notice within five (5) days of becoming aware of the Upset.
- B. The Permittee seeking to establish the occurrence of an Upset as an affirmative defense shall have the burden of proof.
- C. The Permittee shall control production of all discharges to the extent necessary to maintain compliance with categorical pretreatment standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. The requirement under this Section applies even in a situation where the primary source of power of the treatment facility is reduced, lost or fails.


San José-Santa Clara Regional Wastewater Facility Industrial Wastewater Discharge Permit

F. AGENCY APPROVAL

INSPECTOR

  
Chris Fivecoat (Nov 12, 2020 11:07 PST)  
Chris Fivecoat

PERMIT WRITER

  
John Fosnaugh (Nov 12, 2020 11:10 PST)  
John Fosnaugh

KERRIE ROMANOW  
Director  
Environmental Services Department

  
Rajani Nair (Nov 13, 2020 13:11 PST)

By: RAJANI NAIR  
Deputy Director  
Environmental Services Department  
Watershed Protection Division

Nov 13, 2020  
DATE

DIANE ASUNCION  
Acting Compliance Manager  
City of Santa Clara



*Environmental Services Department*

SAN JOSÉ-SANTA CLARA REGIONAL WASTEWATER FACILITY  
WATERSHED PROTECTION

**CONTRIBUTING AGENCIES**

CITY OF SAN JOSÉ  
CITY OF SANTA CLARA  
COUNTY SANITATION DIST. NO. 2 - 3  
BURBANK SANITARY DISTRICT  
CUPERTINO SANITARY DISTRICT  
CITY OF CUPERTINO  
CITY OF MILPITAS  
WEST VALLEY SANITATION DISTRICT  
CITIES OF CAMPBELL, LOS GATOS  
MONTE SERENO, AND SARATOGA

11/19/2020

Mr. Tom Huynh  
Apple, Inc.  
One Apple Park Way  
Cupertino, CA 95014

Discharge Address: 3250 Scott Blvd., Santa Clara, CA 95054

Dear Mr. Huynh:

Enclosed is Wastewater Discharge Permit No. SC-461B issued to Apple, Inc., 3250 Scott Blvd., Santa Clara, CA 95054, dated November 20, 2020. This Permit expires on November 19, 2025. Please note any special requirements in your Permit regarding equipment installation and the submittal schedule for self-monitoring reports.

An application for permit renewal is due ninety days prior to the expiration date for this Permit, and must be accompanied by the appropriate permit fee. Applications received after the due date will be subject to delinquent fees and enforcement actions.

If the quantity or strength of the wastewater discharged from your firm substantially changes, an application for a new permit must be submitted pursuant to Section 13.10.440 of the Santa Clara City Code.

Any questions or comments regarding your Permit should be directed to Chris Fivecoat, the Environmental Inspector assigned to your company. Mr. Fivecoat can be reached at (408) 793-4382 or [chris.fivecoat@sanjoseca.gov](mailto:chris.fivecoat@sanjoseca.gov).

Sincerely,

*Rajani Nair*

[Rajani Nair \(Nov 13, 2020 13:11 PST\)](#)

RAJANI NAIR  
Deputy Director

Enclosure

cc: Diane Asuncion, Acting Compliance Manager, City of Santa Clara



## **HAZARDOUS WASTE TANK SYSTEM ASSESSMENT**

### **ARIA Acid Waste Neutralization (AWN) System Santa Clara, CA**

*Prepared for:*  
**Apple, Inc.**  
1 Infinite Loop  
Cupertino, California 95014

*Prepared by:*  
**TRC**  
10680 White Rock Road, Suite 100  
Rancho Cordova, CA 95670

**October 2022**

# HAZARDOUS WASTE TANK SYSTEM ASSESSMENT

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### LIST OF FIGURES

FIGURE 1: Tank System Layout

### LIST OF APPENDICES

APPENDIX A: Photographs

### LIST OF ATTACHMENTS

ATTACHMENT 1: AW-LS Information

ATTACHMENT 2: AWN-TNK-010/100/200/300/400 Information

ATTACHMENT 3: Leak Test Records

## **I. INTRODUCTION**

This assessment is specifically for the Acid Waste Neutralization (AWN) System at the Apple, Inc. (Apple) ARIA facility (Facility), located at 3250 Scott Boulevard in Santa Clara, California.

This assessment was performed in accordance with the requirements of Section 66265.192 of Title 22 of the California Code of Regulations (22 CCR 66265.192), and included a physical inspection of the tank system and an evaluation of secondary containment.

The system was previously assessed when new in September 2015, and again in November 2020. This is a 5-year re-assessment per 22 CCR 66265.192(h)(1) to bring all systems at the facility onto the same assessment schedule.

## **II. PURPOSE**

22 CCR 66265.192 requires that owners of a new hazardous waste tank system (subject to 22 CCR 67450.2 "Permit by Rule") ensure that the tank system is adequately designed and constructed, and obtain and keep on file at the Facility a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California that attests to the tank system's integrity.

The written assessment shall determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored or treated to ensure that it will not collapse, rupture, or fail.

At a minimum, the assessment for an above-ground system shall include the following information: 1) design standard(s) according to which the tank and ancillary equipment have been constructed; 2) hazardous characteristics of the waste(s) to be handled; 3) foundation and seismic anchorage design.

All new tank systems shall be tested for tightness, and determined to be free of leaks before being placed in use.

In accordance with 22 CCR 66265.192(h)(1), this assessment is valid for a maximum period of five (5) years, and shall include all of the information described in 22 CCR 66265.192(k). The required assessment information is presented in the following Section III.

## **III. ASSESSMENT AND FINDINGS**

### **22 CCR 66265.192(k)(1)**

The tank system consists of the acid waste pump lift station (AW-LS), equalization tank (AWN-TNK-010), three (3) reaction tanks (AWN-TNK-100/200/300), diversion tank (AWN-TNK-400), and ancillary piping. The lift station is a vertical rectangular tank constructed of white polypropylene and has a primary tank capacity of 203 gallons. The equalization, reaction and diversion tanks are identical, with the exception of nozzle locations, vertical cylindrical tanks constructed of fiberglass and vinyl ester resin (Hetron 922); each with a capacity of approximately 3,000 gallons.



## **22 CCR 66265.192(k)(2)**

### AW-LS

The acid waste pump lift station tank is constructed of ¾”-thick white polypropylene per DVS 2205 design standards. Tank system structural design is in accordance CBC 2013 and ASCE 7-10. Ancillary piping is Schedule 80 (SCH-80) PVC with clear PVC containment pipe, where applicable. See Figure 1 for pipe sizes. The lift station utilizes two (2) internal 5-hp stainless steel submersible pumps. A drawing of the tank, with dimensions, is included in Attachment 1.

### AWN-TNK-010/100/200/300/400

The equalization, reaction and diversion tanks are constructed of variable thickness fiberglass and vinyl ester resin (Hetron 922) per ASTM D3299 and D4097 design standards. Tank system structural design is in accordance CBC 2013 and ASCE 7-10. Ancillary piping is Schedule 80 (SCH-80) PVC with clear PVC containment pipe, where applicable. See Figure 1 for pipe sizes. The acid waste neutralization system utilizes four (4) 2-hp horizontal centrifugal pumps. The tanks are 8 feet in diameter and 8 feet in height. A drawing of the tanks, with dimensions, is included in Attachment 2.

## **22 CCR 66265.192(k)(3)**

The tank system was constructed in September 2015 (7 years old).

## **22 CCR 66265.192(k)(4)**

The lift station tank (AW-LS) is double-walled and the space between the primary and secondary tank is equipped with a liquid sensor that would detect a leak from the primary tank.

The equalization tank (AWN-TNK-010) is located on the mezzanine level within an epoxy-coated concrete berm area. The bermed area is sloped toward a collection drain that flows to the lift station pit. The lift station pit is equipped with a liquid sensor that would detect a leak from the tank or related ancillary piping.

The reaction and diversion tanks (AWN-TNK-100/200/300/400) are located on the ground level within an epoxy-coated concrete berm area. The bermed area is sloped to drain to collection sumps that are equipped with liquid sensors that would detect a leak from a tank or related ancillary piping.

Ancillary pipe that is not within a tank containment berm is double-walled and sloped to drain to liquid sensors that would detect a leak in the primary pipe. All automated systems, including liquid sensors for leak detection, have been tested and confirmed to operate as designed.

## **22 CCR 66265.192(k)(5)**

The tank system is entirely above-ground and materials are not subject to corrosion.

## **22 CCR 66265.192(k)(6)**

The tanks are equipped with ultrasonic level sensors to prevent overflow. All automated systems, including liquid level sensors and pump controls, have been tested and confirmed to operate as designed.

### **22 CCR 66265.192(k)(7)**

The lift station tank (AW-LS) is set within a secondary containment tank, also constructed of ¾'-thick white polypropylene, with an approximate capacity of 255 gallons.

The equalization tank (AWN-TNK-010) is located on the mezzanine level within an epoxy-coated concrete berm area. The bermed area is sloped toward a collection drain that leads directly to the lift station pit (also epoxy-coated concrete) with adequate capacity to contain the full volume of the tank.

The reaction and diversion tanks (AWN-TNK-100/200/300/400) are located on the ground level within an epoxy-coated concrete berm area. The bermed area is sloped to drain to collection sumps and is also connected by a weir to the lift station pit (also epoxy-coated concrete) with adequate capacity to contain the full volume of the tanks.

Ancillary pipe that is not within a tank containment berm is double-walled and sloped to drain to liquid sensors that would detect a leak in the primary pipe. The sensor locations area also fitted with ports that would allow for collection of the leaked liquid.

Along with the leak detection systems described above, the secondary containment for the tank system meets the standards of 22 CCR 66265.192(j) and 22 CCR 66265.193.

### **22 CCR 66265.192(k)(8)**

The system generally handles low-pH (potentially corrosive) waste liquids generated from laboratory activities.

### **22 CCR 66265.192(k)(9)**

No structural damage or inadequate construction/installation items (cracks, punctures, or damaged fittings) were observed.

### **22 CCR 66265.192(k)(10)**

All ancillary pipe was leak tested using air-pressure at the time of installation, test results are included as Attachment 3.

The lift station tank, equalization tank, reaction tanks and diversion tanks were tested by the manufacturer prior to transport to the Facility for installation.

### **22 CCR 66265.192(k)(11)**

Based on the findings of this assessment, the tank system has an estimated remaining service life of approximately 20 years under existing conditions. The estimated remaining service life should be re-evaluated every five (5) years, in conjunction with the re-assessment in accordance with the requirements of 22 CCR 66265.192(h)(1).

IV. CERTIFICATION

**ARIA**  
**Acid Waste Neutralization System**  
**October 2022**

---

22 CCR 66265.192 requires that owners of a new hazardous waste tank system (subject to 22 CCR 67450.2 "Permit by Rule") ensure that the tank system is adequately designed and constructed, and obtain and keep on file at the Facility a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California that attests to the tank system's integrity.

The preceding written assessment has determined that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored or treated to ensure that it will not collapse, rupture, or fail. This assessment for an above-ground system considered the following: 1) design standard(s) according to which the tank and ancillary equipment have been constructed; 2) hazardous characteristics of the waste(s) to be handled; 3) foundation and seismic anchorage design.

The tank system was inspected on October 19, 2022. The visual inspection found none of the following to be in evidence: leaks, weld breaks, punctures, scrape of protective coatings, cracks, corrosion, structural damage or installation defects.

As required by 22 CCR 66265.192(k)(11), based on the findings of this assessment, I estimate that the new tank system has at least twenty (20) years of service life under current conditions. In accordance with 22 CCR 66265.192(h)(1), this assessment is valid for a maximum period of five (5) years and the tank system should be re-assessed at that time to obtain a new estimate of remaining service life.

**Based on my assessment of the tank system, I can attest that the tank system has sufficient structural integrity, is acceptable for transferring, storing and treating the intended hazardous waste, and is suitably designed to achieve the requirements under 22 CCR 66265.192.**

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*



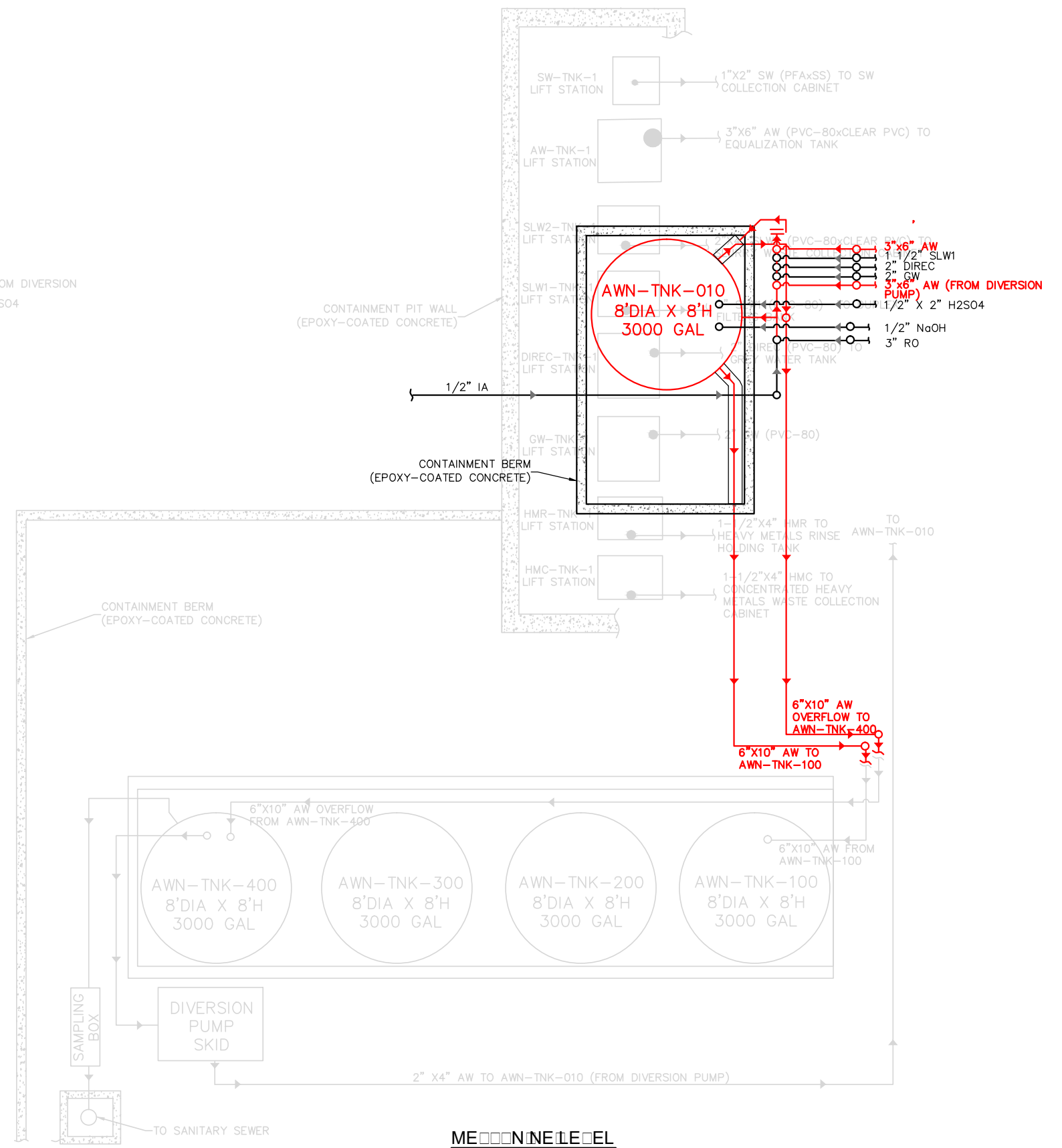
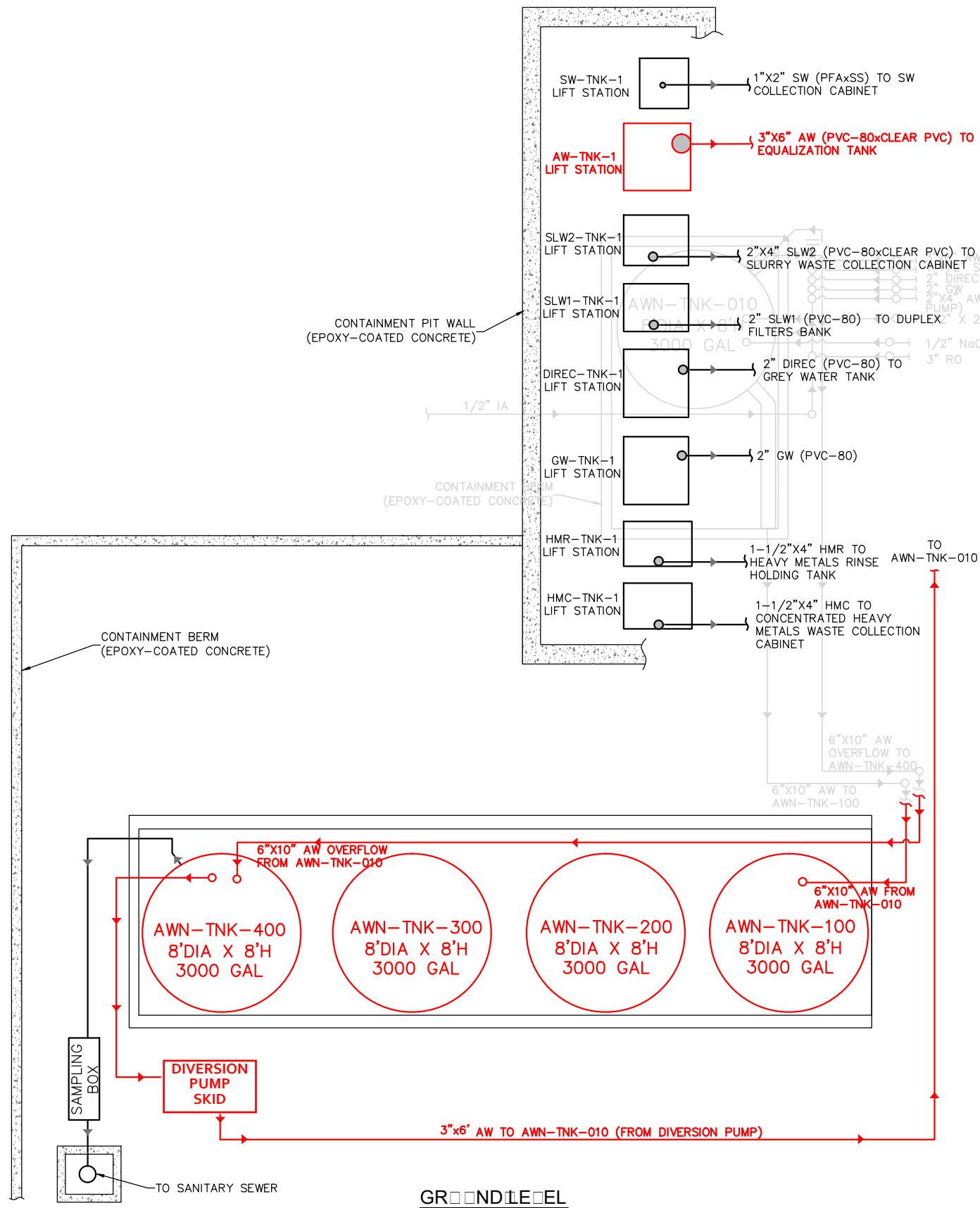
Stephen V. Huvane, P.E.  
Civil (CA) No. 52385



12-9-2022

Date

FIGURE



**LEGEND**  
 — SYSTEM COMPONENTS ASSESSED

# TANK SYSTEM LAYOUT

## ARIA A ID WASTE NEUTRALIZATION SYSTEM

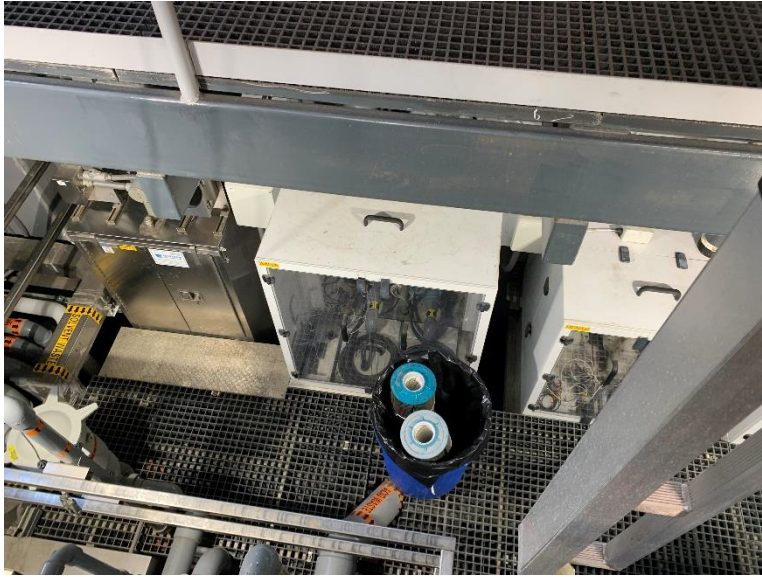


**FIGURE** □

**APPENDIX A**

**PHOTOGRAPHS**

**October 19, 2022**



Lift Station (AW-LS) and Lift Station Pit



Ancillary Piping to Equalization Tank



Equalization Tank (AWN-TNK-010)



Reaction Tank (AWN-TNK-100) and Ancillary Piping





Reaction Tank (AWN-TNK-200) and Ancillary Piping



Reaction Tank (AWN-TNK-300) and Ancillary Piping

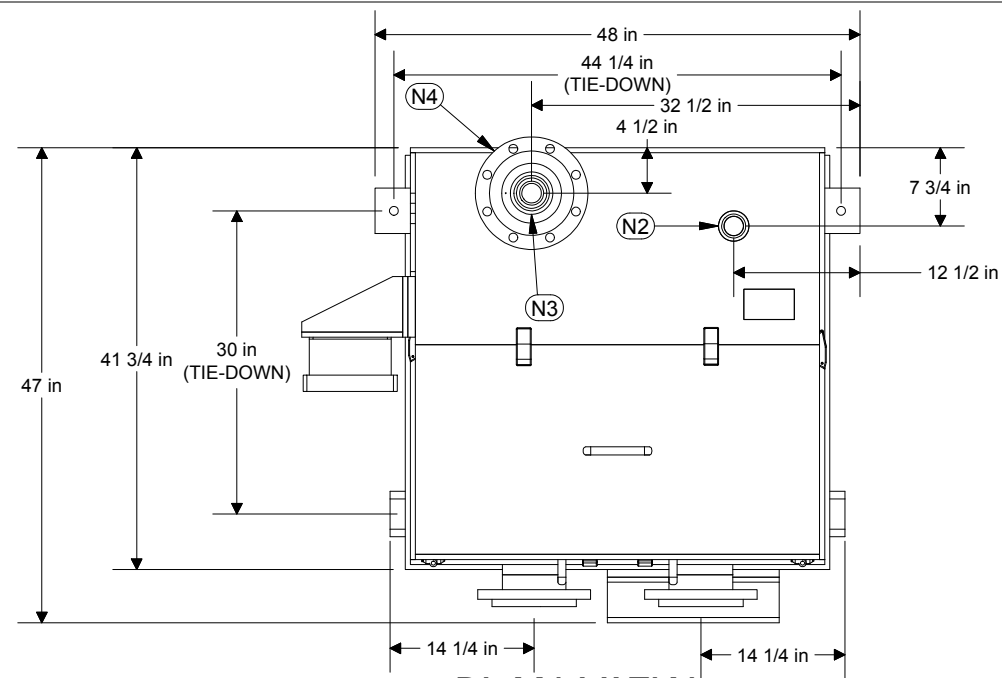


Diversion Tank (AWN-TNK-400) and Ancillary Piping

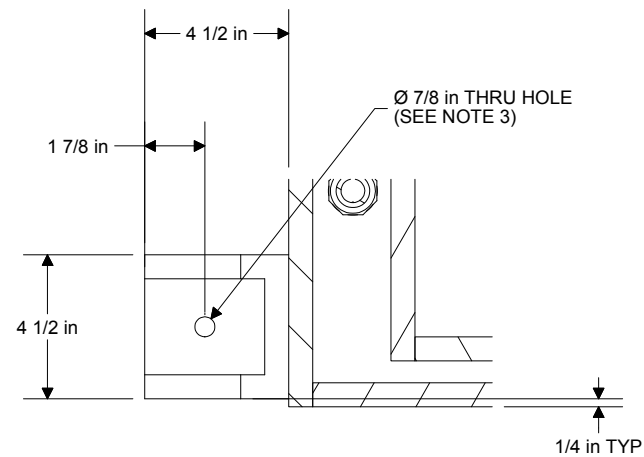


Diversion Pump Skid and Ancillary Piping

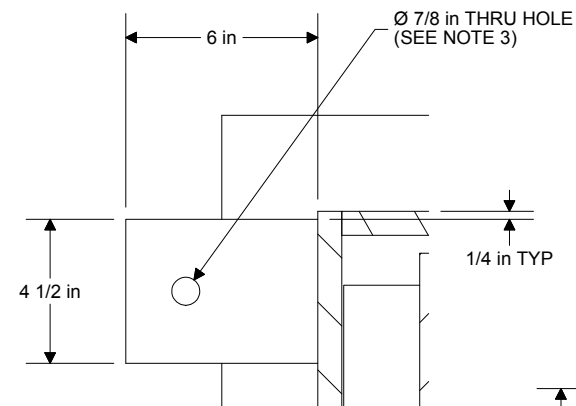
ATTACHMENT 1  
AW-LS INFORMATION



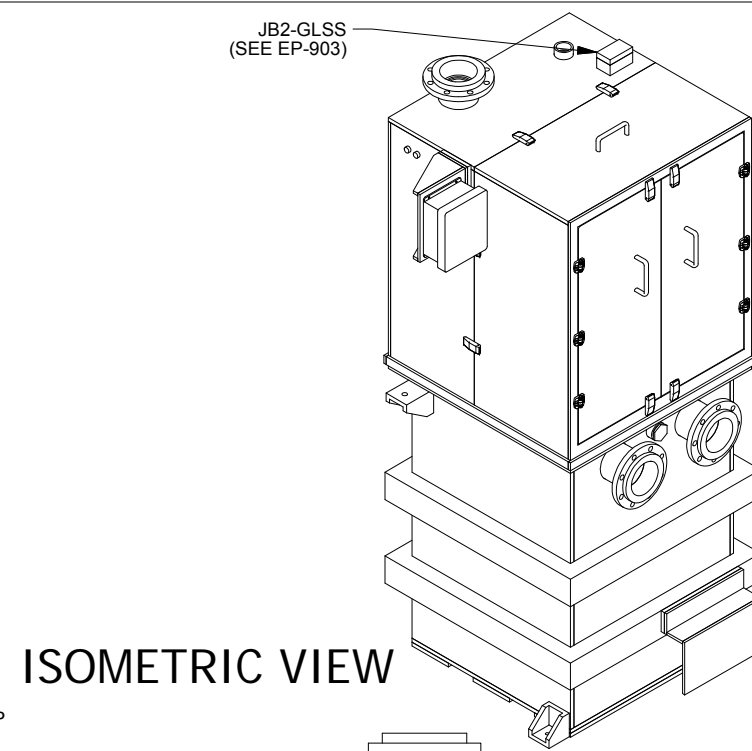
PLAN VIEW



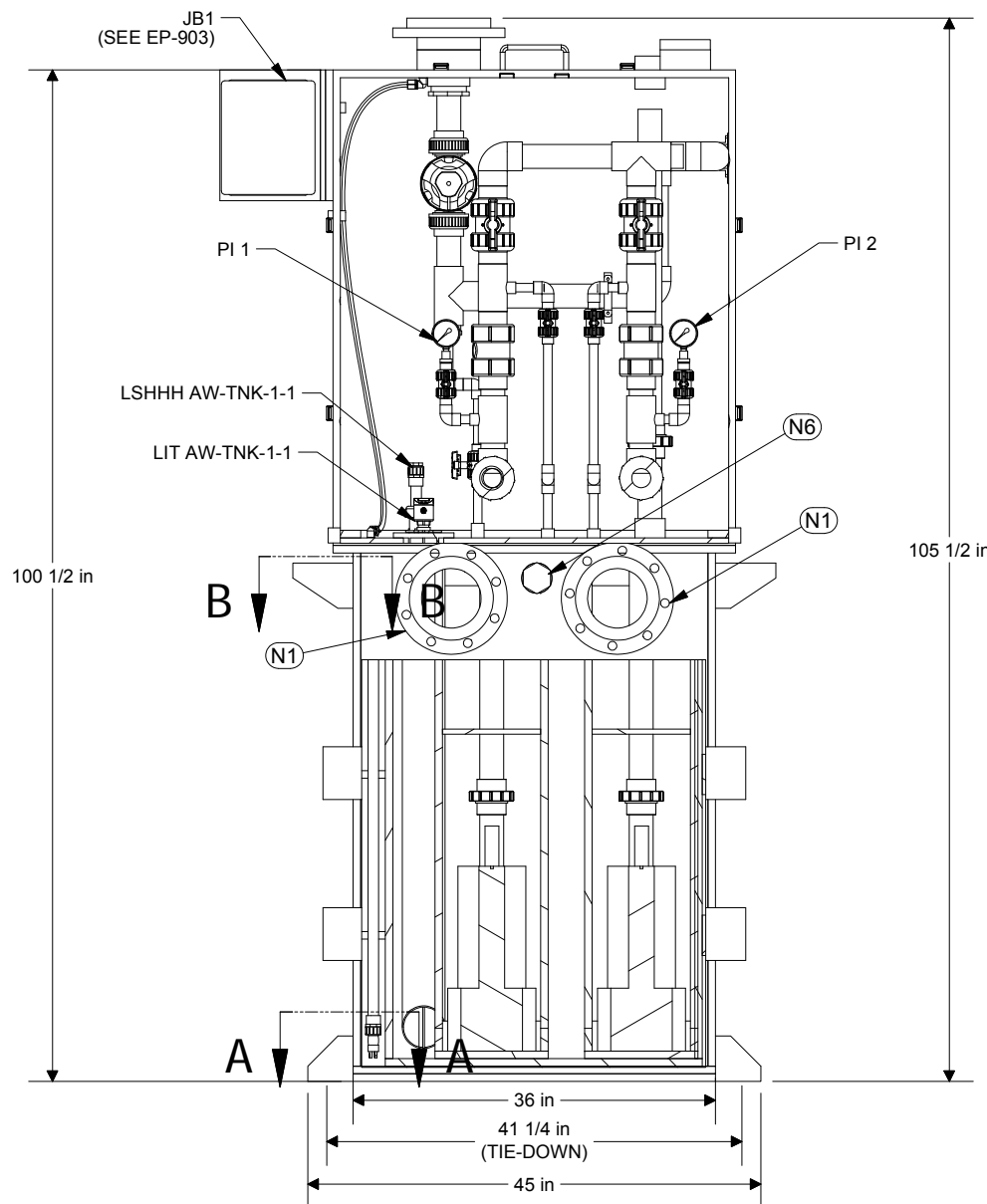
SECTION A-A  
(TIE-DOWN)



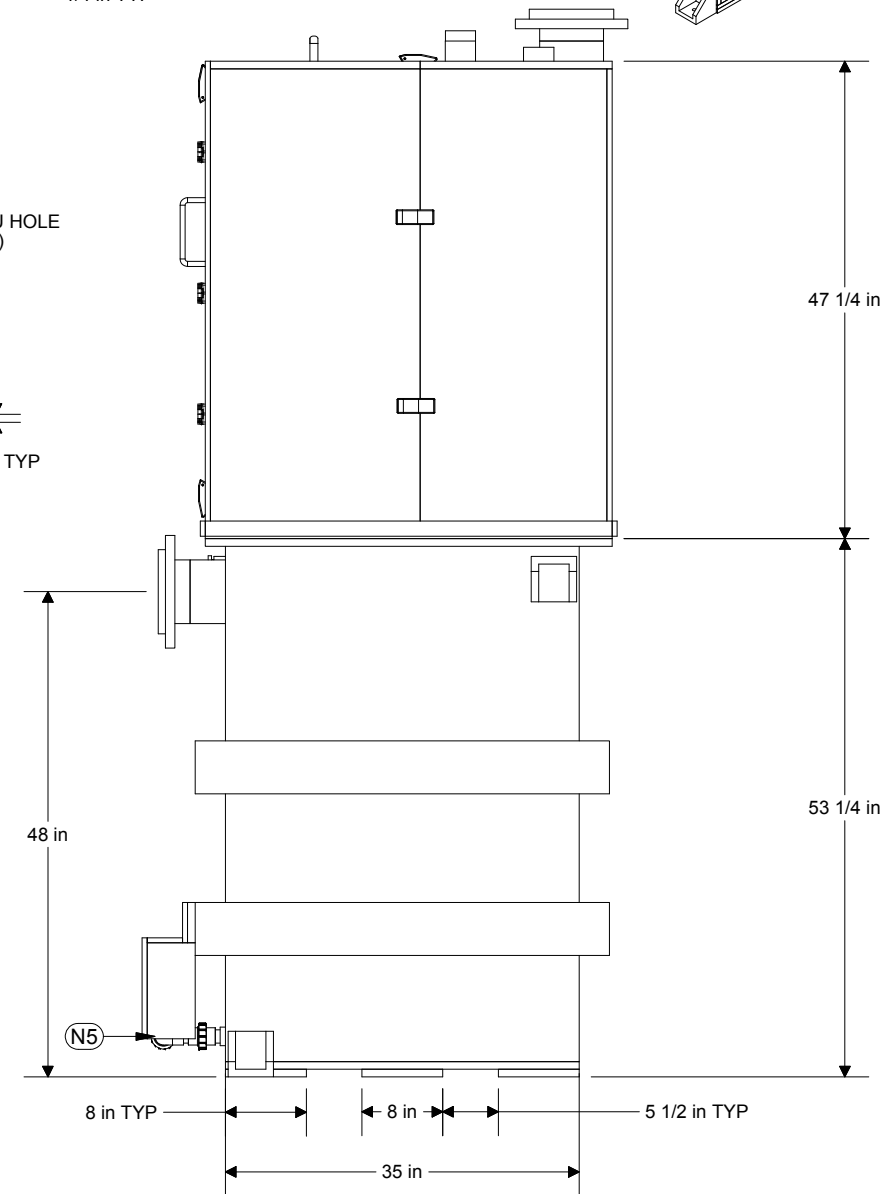
SECTION B-B  
(INVERTED TIE-DOWN)



ISOMETRIC VIEW



ELEVATION VIEW



SIDE ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                    |
|-----------------|-------------|-----|--------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE            |
| N1              | 6" FLANGE   | 2   | INLET              |
| N2              | 2" FNPT     | 1   | VENT               |
| N3              | 3" FNPT     | 1   | PUMPED DISCHARGE   |
| N4              | 6" FLANGE   | 1   | DOUBLE CONTAINMENT |
| N5              | 1" FNPT     | 1   | CONTAINMENT DRAIN  |
| N6              | 2" FNPT     | 2   | PLUGGED OVERFLOW   |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC.
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, PROVIDED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - FIELD WIRING FROM JUNCTION BOX TO CONTROL PANEL ON GRADE BY OTHERS.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 1520 LBS
    - OPERATING WEIGHT: 3450 LBS
    - MAXIMUM WEIGHT: 3730 LBS
  - PRIMARY TANK VOLUME: 203 GAL  
CONTAINMENT TANK VOLUME: 255 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 4/15/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

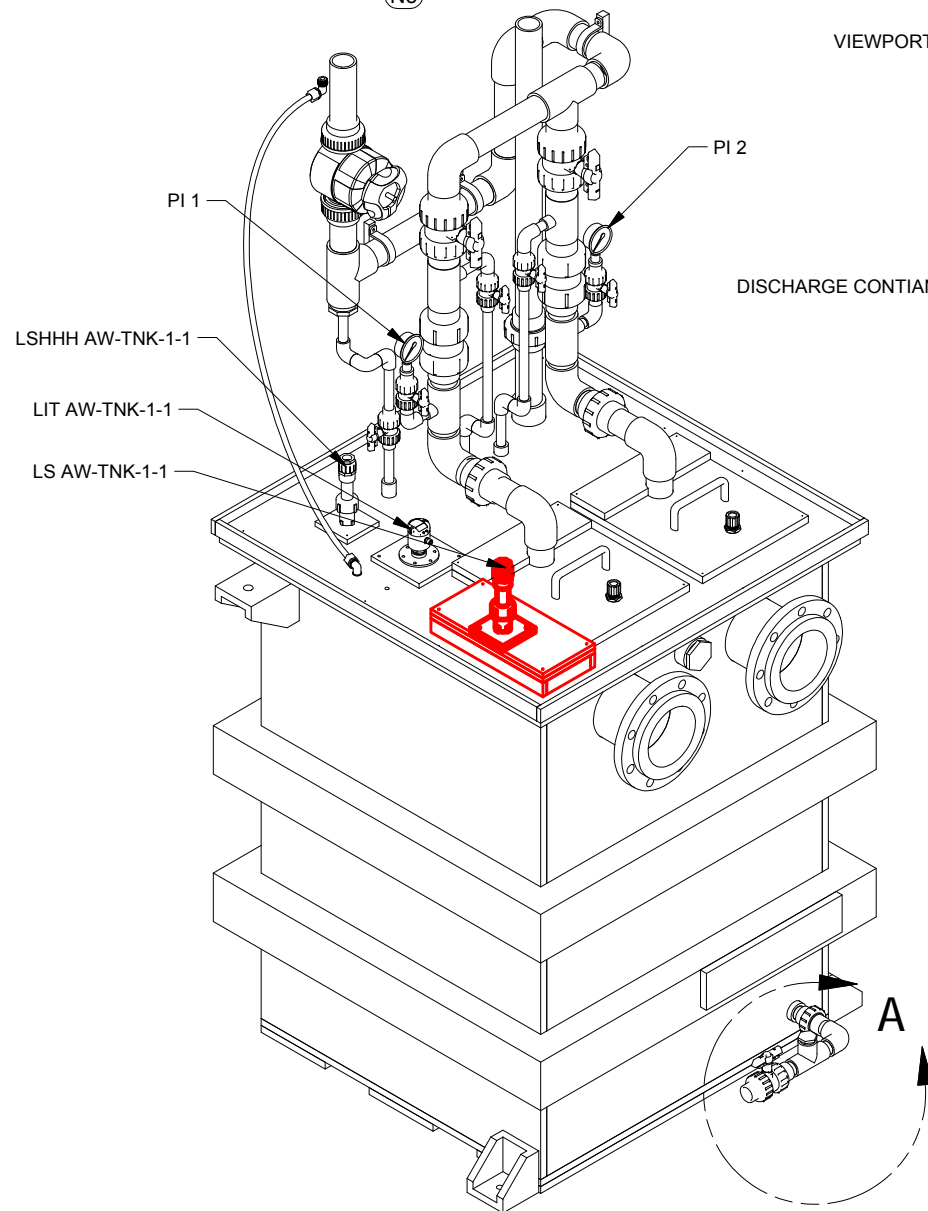
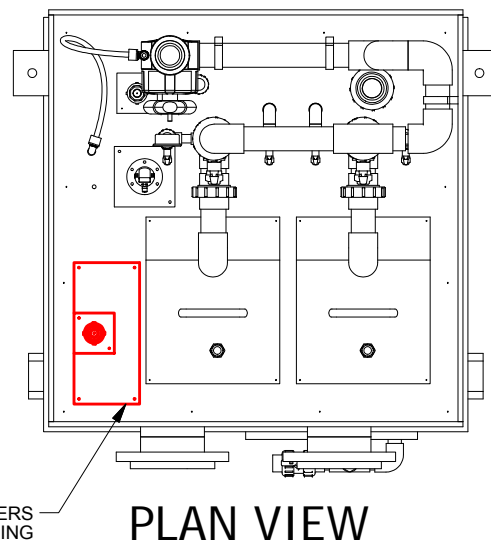
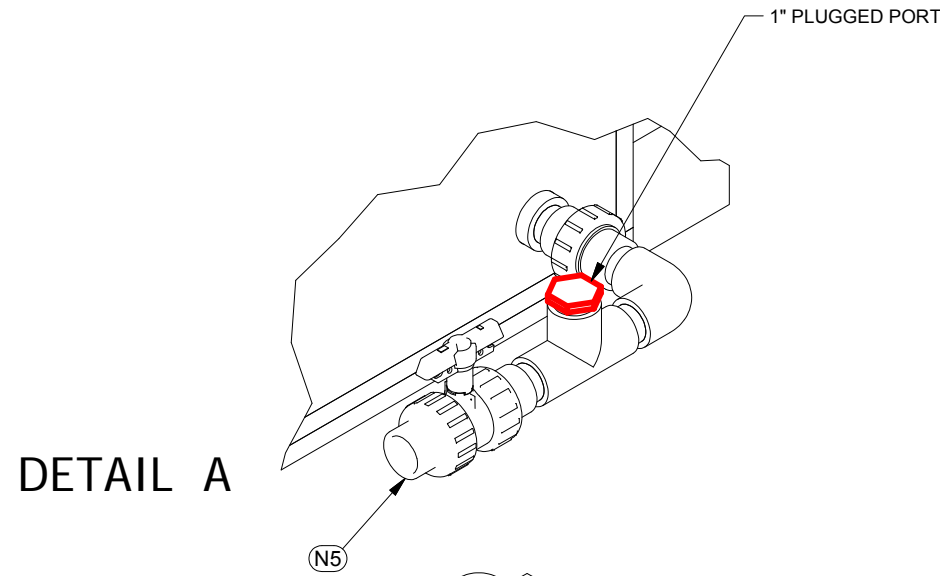
| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

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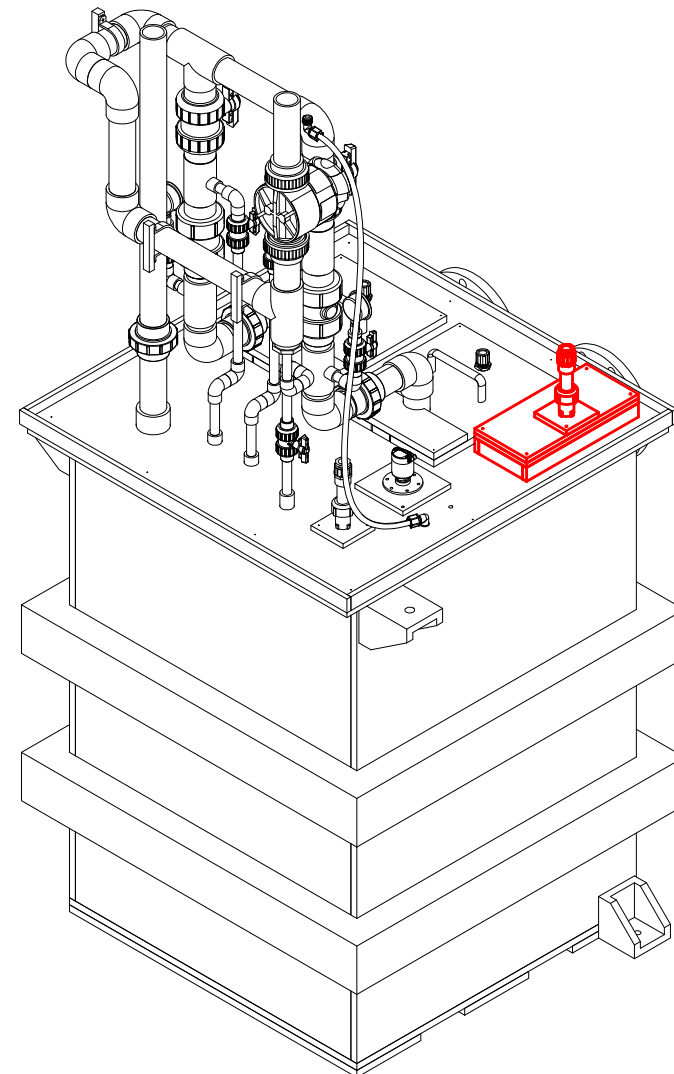
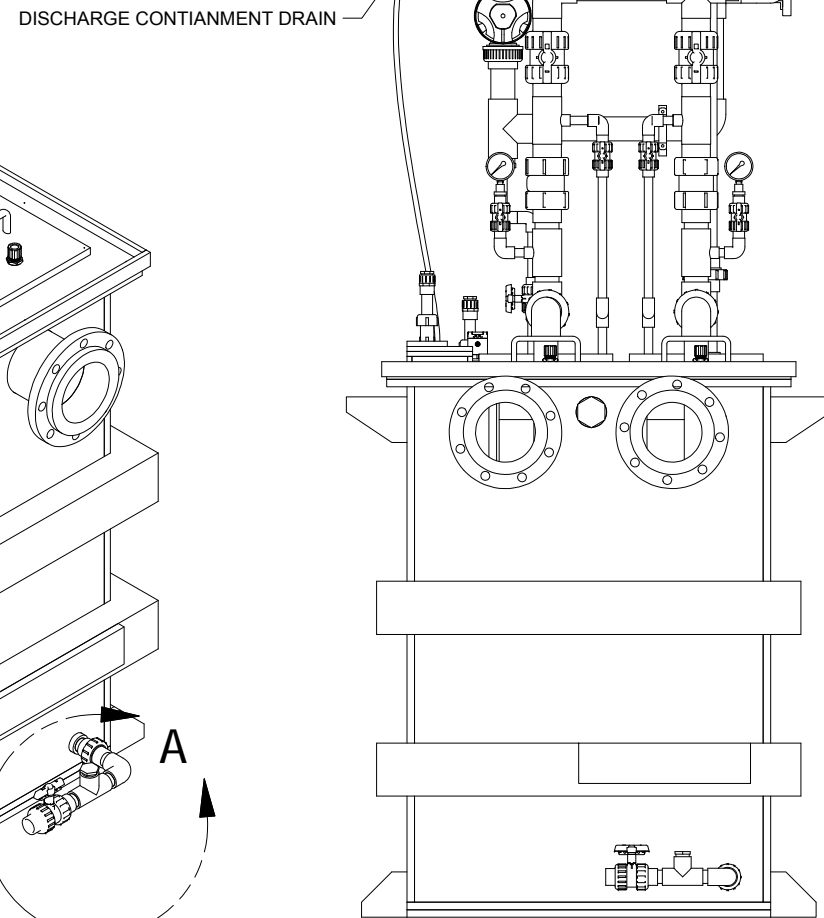


|                                                                                       |               |
|---------------------------------------------------------------------------------------|---------------|
| TITLE: ARIA<br>ACID WASTE PUMP LIFT STATION (AW-LS)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>3 |
|---------------------------------------------------------------------------------------|---------------|

|           |                           |            |               |
|-----------|---------------------------|------------|---------------|
| SIZE<br>B | DWG. NO.<br>141190-MG-901 | SCALE: NTS | SHEET: 1 OF 3 |
|-----------|---------------------------|------------|---------------|



FRONT ISOMETRIC VIEW



| NOZZLE SCHEDULE |             |     |                    |
|-----------------|-------------|-----|--------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE            |
| N1              | 6" FLANGE   | 2   | INLET              |
| N2              | 2" FNPT     | 1   | VENT               |
| N3              | 3" FNPT     | 1   | PUMPED DISCHARGE   |
| N4              | 6" FLANGE   | 1   | DOUBLE CONTAINMENT |
| N5              | 1" FNPT     | 1   | CONTAINMENT DRAIN  |
| N6              | 2" FNPT     | 2   | PLUGGED OVERFLOW   |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC.
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, PROVIDED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - FIELD WIRING FROM JUNCTION BOX TO CONTROL PANEL ON GRADE BY OTHERS.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 1520 LBS
    - OPERATING WEIGHT: 3450 LBS
    - MAXIMUM WEIGHT: 3730 LBS
  - PRIMARY TANK VOLUME: 203 GAL  
CONTAINMENT TANK VOLUME: 255 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 4/15/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

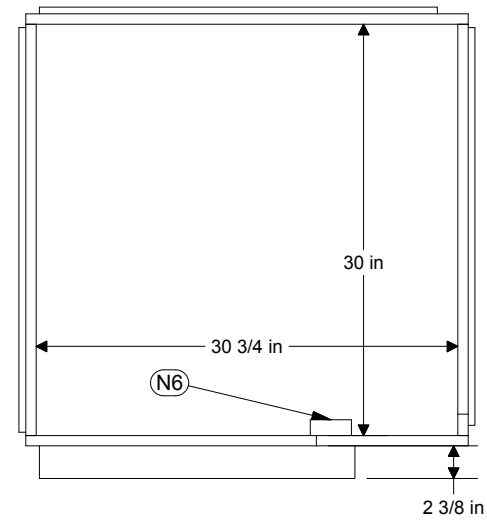
| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

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|                                                                                       |               |
|---------------------------------------------------------------------------------------|---------------|
| TITLE: ARIA<br>ACID WASTE PUMP LIFT STATION (AW-LS)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>3 |
|---------------------------------------------------------------------------------------|---------------|

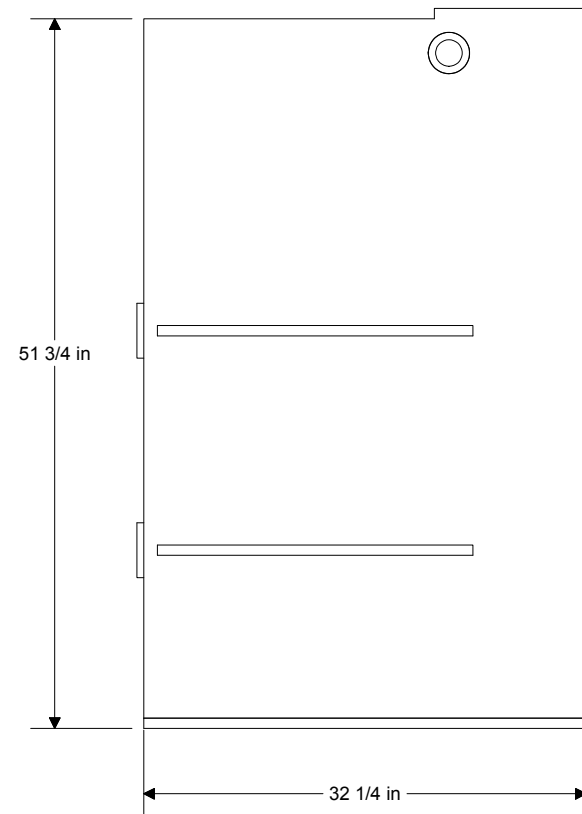
|           |                           |            |               |
|-----------|---------------------------|------------|---------------|
| SIZE<br>B | DWG. NO.<br>141190-MG-902 | SCALE: NTS | SHEET: 2 OF 3 |
|-----------|---------------------------|------------|---------------|



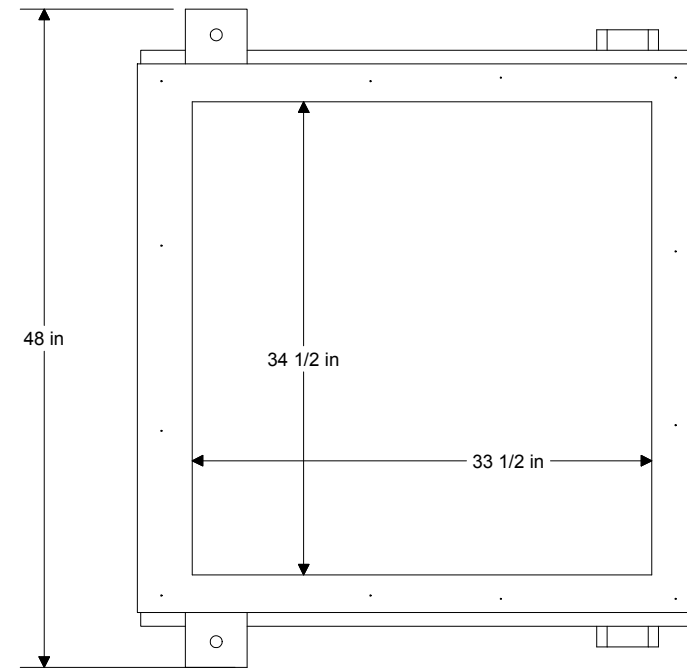
PLAN VIEW

# PRIMARY TANK

VOLUME: 203 GAL



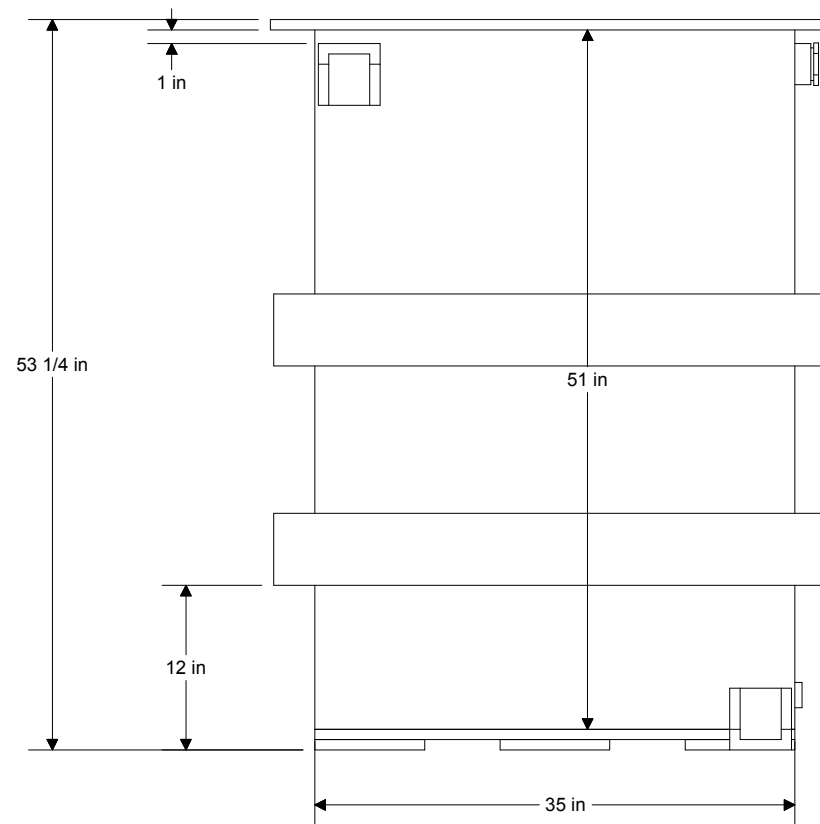
ELEVATION VIEW



PLAN VIEW

# CONTAINMENT TANK

VOLUME: 255 GAL



ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                    |
|-----------------|-------------|-----|--------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE            |
| N1              | 6" FLANGE   | 2   | INLET              |
| N2              | 2" FNPT     | 1   | VENT               |
| N3              | 3" FNPT     | 1   | PUMPED DISCHARGE   |
| N4              | 6" FLANGE   | 1   | DOUBLE CONTAINMENT |
| N5              | 1" FNPT     | 1   | CONTAINMENT DRAIN  |
| N6              | 2" FNPT     | 2   | PLUGGED OVERFLOW   |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC.
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, PROVIDED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - FIELD WIRING FROM JUNCTION BOX TO CONTROL PANEL ON GRADE BY OTHERS.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 1520 LBS
    - OPERATING WEIGHT: 3450 LBS
    - MAXIMUM WEIGHT: 3730 LBS
  - PRIMARY TANK VOLUME: 203 GAL  
CONTAINMENT TANK VOLUME: 255 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 4/15/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

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|                                                                                       |               |
|---------------------------------------------------------------------------------------|---------------|
| TITLE: ARIA<br>ACID WASTE PUMP LIFT STATION (AW-LS)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>3 |
|---------------------------------------------------------------------------------------|---------------|

|            |                           |
|------------|---------------------------|
| SIZE<br>B  | DWG. NO.<br>141190-MG-903 |
| SCALE: NTS | SHEET: 3 OF 3             |

ATTACHMENT 2

AWN-TNK-010/100/200/300/400 INFORMATION



TOLL FREE 1-888-NEED-FRP

SERIAL #: WT - 14091 - 004

SERVICE: EQUALIZATION WASTEWATER

TANK NUMBER: AWN-TNK-010

DESIGN TEMPERATURE: 120F

SPECIFIC GRAVITY: 1.1

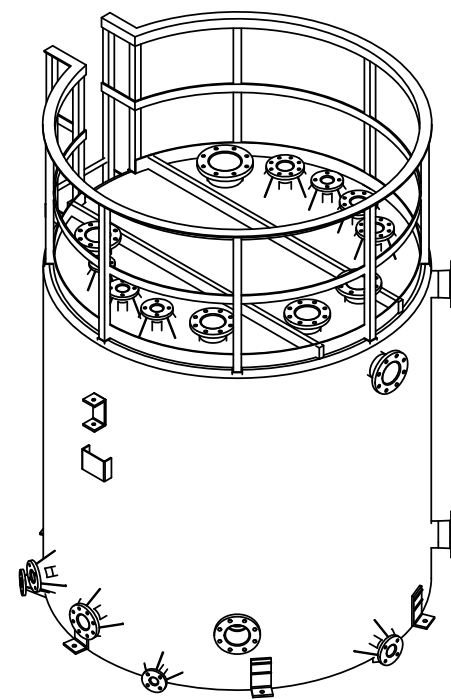
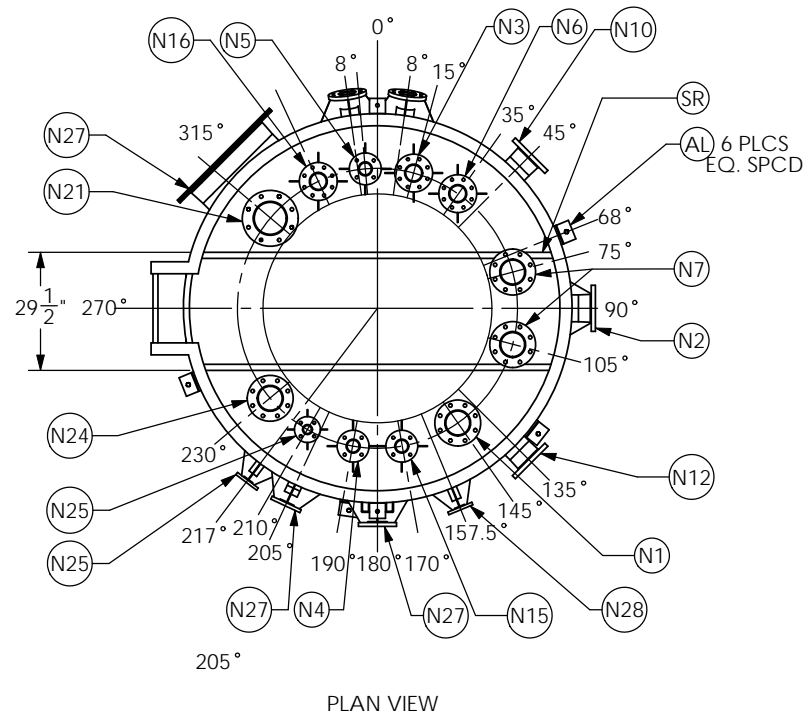
OPERATING PRESSURE: ATMOSPHERIC

MAXIMUM CAPACITY 3,000 GALLONS

RESIN: HETRON 922

ESTIMATED EMPTY WEIGHT: TBD LBS.

BUILT: JANUARY 2015



| PARTS LIST |      |       |                 |                 |      |            |     |
|------------|------|-------|-----------------|-----------------|------|------------|-----|
| ITEM NO.   | SIZE | MATL  | SERVICE         | DESCRIPTION     | PROJ | PSI RATING | QTY |
| N1         | 6"   | FRP   | FF FLANGE       | WASTEWATER INL  | 6"   | 150        | 1   |
| N2         | 6"   | FRP   | FF FLANGE       | WASTEWATER INL  | 6"   | 150        | 1   |
| N3         | 4"   | FRP   | FF FLANGE       | SPARE           | 6"   | 150        | 1   |
| N4         | 3"   | FRP   | FF FLANGE       | INLET FROM AMM  | 6"   | 150        | 1   |
| N5         | 3"   | FRP   | FF FLANGE       | INLET FROM ACID | 6"   | 150        | 1   |
| N6         | 4"   | FRP   | FF FLANGE       | INLET FROM AWN  | 6"   | 150        | 1   |
| N7         | 6"   | FRP   | FF FLANGE       | CHEMICAL INJECT | 6"   | 150        | 2   |
| N8         | -    | -     | NOT ON TANK     | RESERVED        | -    | -          | -   |
| N9         | -    | -     | NOT ON TANK     | RESERVED        | -    | -          | -   |
| N10        | 6"   | FRP   | FF FLANGE       | OVERFLOW        | 6"   | 150        | 1   |
| N11        | -    | -     | NOT ON TANK     | RESERVED        | -    | -          | -   |
| N12        | 6"   | FRP   | FF FLANGE       | WASTEWATER TO   | 6"   | 150        | 1   |
| N13        | 6"   | FRP   | FF FLANGE       | WASTEWATER TO   | 6"   | 150        | 1   |
| N14        | -    | -     | NOT ON TANK     | RESERVED        | -    | -          | -   |
| N15        | 3"   | FRP   | FF FLANGE       | SPARE           | 6"   | 150        | 1   |
| N16        | 4"   | FRP   | FF FLANGE       | VENT            | 6"   | 150        | 1   |
| N17        | -    | -     | NOT ON TANK     | RESERVED        | -    | -          | -   |
| N18        | 3"   | FRP   | FF FLANGE       | TANK DRAIN      | 6"   | 150        | 1   |
| N19        | -    | -     | NOT ON TANK     | RESERVED        | -    | -          | -   |
| N20        | -    | -     | NOT ON TANK     | RESERVED        | -    | -          | -   |
| N21        | 8"   | FRP   | FLANGE W/ COVER | VIEWPORT        | 6"   | 150        | 1   |
| N22        | 4"   | FRP   | FF FLANGE       | PUMP SUCTION    | 6"   | 150        | 1   |
| N23        | 3"   | FRP   | FF FLANGE       | EDUCTOR INLET   | 6"   | 150        | 2   |
| N24        | 6"   | FRP   | FF FLANGE       | SENSOR PORT     | 6"   | 150        | 1   |
| N25        | 2"   | FRP   | FF FLANGE       | SENSOR PORT     | 6"   | 150        | 2   |
| N26        | 4"   | FRP   | FF FLANGE       | SENSOR PORT     | 6"   | 150        | 2   |
| N27        | 24"  | FRP   | MANWAY W/ COVER | MANWAY          | 6"   | 25         | 1   |
| N28        | 2"   | FRP   | FF FLANGE       | SPARE           | 6"   | 150        | 1   |
| N29        | -    | -     | -               | -               | -    | -          | -   |
| HR         | -    | FRP   | -               | HANDRAIL ASSY   | -    | -          | 1   |
| SR         | -    | WOOD  | -               | STIFFENING RIB  | -    | -          | 2   |
| LL         | -    | 316SS | -               | LIFTING LUG     | -    | -          | 2   |
| AL         | -    | 316SS | -               | ANCHOR LUG      | -    | -          | 6   |
| TL         | -    | 304SS | -               | TANK LABEL      | -    | -          | 1   |

- NOTES:
- BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED
  - NOZZLES AND COUPLINGS PROTRUDE 2 INCHES WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.
  - ALL FLANGED NOZZLES 4" AND SMALLER ARE REINFORCED WITH FOUR 1/4 INCH THICK GUSSE
  - SEE PLAN VIEW FOR TRUE ORIENTATION
  - ALL LIFTING LUGS, ANCHOR LUGS AND FASTENERS ARE STAINLESS STEEL
  - MANWAY GASKET MATERIAL IS EPDM

DESIGN:

SERVICE: EQUALIZATION TANK

FABRICATION STANDARDS: ASTM D 3299 & ASTM D 4097

VISUAL ACCEPTANCE: LEVEL II IAW ASTM D2563

FABRICATION METHOD: FILAMENT WOUND AND HAND LAYUP

SEISMIC ZONE: D

WIND: 115 MPH

DESIGN ROOF LOAD: 250LBS

DESIGN PRESSURE: ATMOSPHERIC

DESIGN VACUUM: ATMOSPHERIC

MAX DESIGN TEMPERATURE: 150 F

SPECIFIC GRAVITY: 1.1

PRESSURE: ATMOSPHERIC

MATERIALS OF CONSTRUCTION: HETRON 922 OR EQUAL

CURE SYSTEM: MEKP

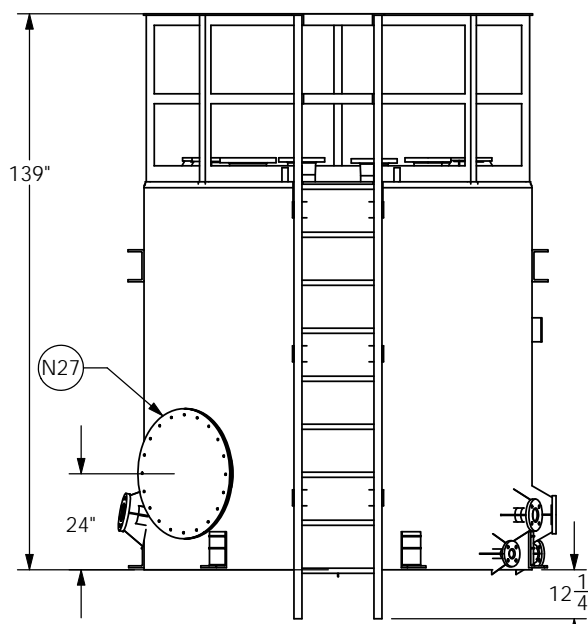
CORROSION BARRIER: 100 MILS NEXUS VEIL

COLOR: WHITE GEL COAT W/UV INHIBITOR

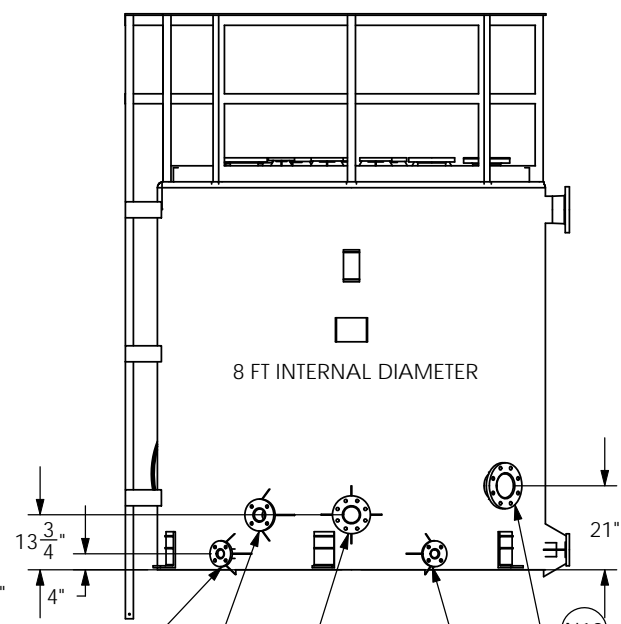
ESTIMATED EMPTY WEIGHT: 1,000 LBS

TANK CAPACITY: 3,000 GALLONS

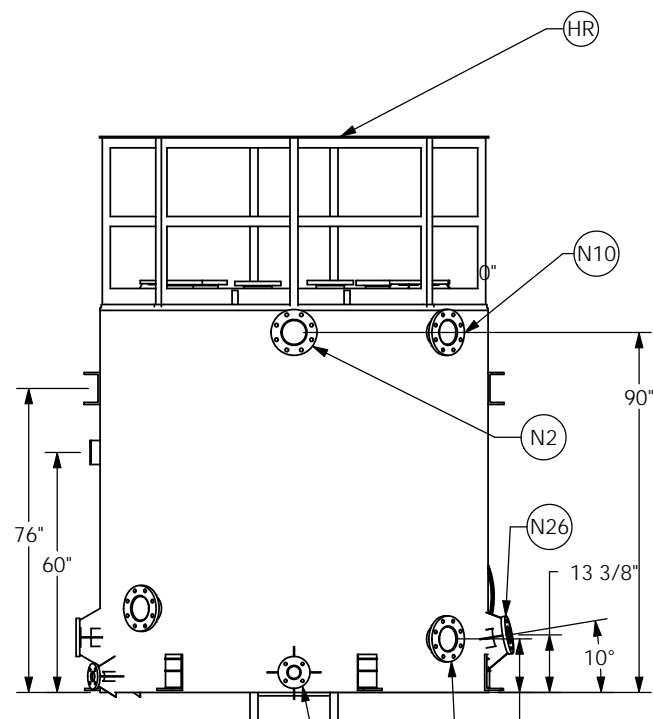
| REVISIONS |                                                         |           |
|-----------|---------------------------------------------------------|-----------|
| REV       | DESCRIPTION                                             | DATE      |
| A         | RELEASE FOR FABRICATION                                 | 2/5/2015  |
| B         | ADDED LADDER RUNG TO TANK FACE MIN. DISTANCE ON SHEET 2 | 2/25/2015 |



270° ELEVATION



180° ELEVATION



90° ELEVATION

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/8

ANGULAR: ± 1 DEGREE

TWO PLACE DECIMAL ±0.25

THREE PLACE DECIMAL ±0.13

INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL

FINISH

DO NOT SCALE DRAWING

| NAME       | DATE     |
|------------|----------|
| DRAWN: WH  | 12/08/14 |
| CHECKED:   |          |
| ENG APPR.: |          |
| MFG APPR.: |          |
| Q.A.:      |          |
| COMMENTS:  |          |

611 ROCK SPRINGS RD.  
ESCONDIDO, CA. 92025  
TOLL FREE 1(888)NEED-FRP

**FTEng** Fiber-Tech ENGINEERING Inc. CUSTOM COMPOSITES

TITLE: WASTECH  
21201 ITASCA STREET  
CHATSWORTH, CA

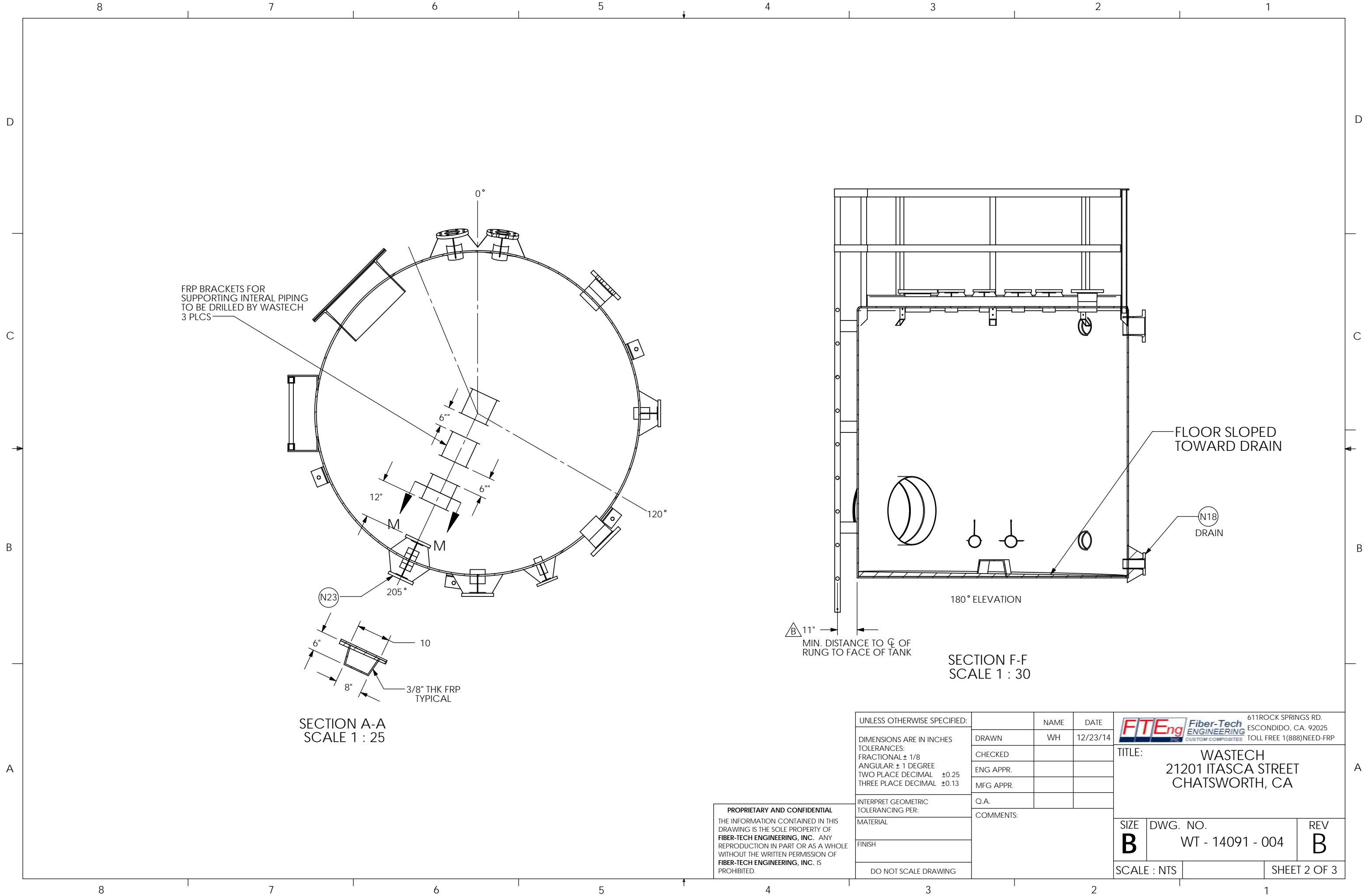
REACTION WASTEWATER TANK

|                |                            |               |
|----------------|----------------------------|---------------|
| SIZE: <b>B</b> | DWG. NO.: WT - 14091 - 004 | REV: <b>B</b> |
| SCALE: NTS     |                            | SHEET 1 OF 3  |

PROPRIETARY AND CONFIDENTIAL

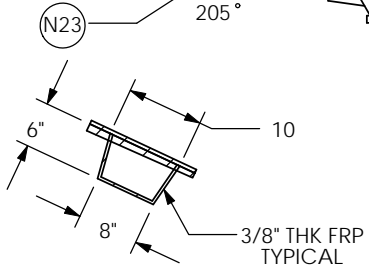
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FRP BRACKETS FOR SUPPORTING INTERNAL PIPING TO BE DRILLED BY WASTECH 3 PLCS

SECTION A-A  
SCALE 1 : 25



11" MIN. DISTANCE TO  $\phi$  OF RUNG TO FACE OF TANK

SECTION F-F  
SCALE 1 : 30

FLOOR SLOPED TOWARD DRAIN

(N18) DRAIN

180° ELEVATION

**PROPRIETARY AND CONFIDENTIAL**  
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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL  $\pm 1/8$   
ANGULAR:  $\pm 1$  DEGREE  
TWO PLACE DECIMAL  $\pm 0.25$   
THREE PLACE DECIMAL  $\pm 0.13$

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

|           | NAME | DATE     |
|-----------|------|----------|
| DRAWN     | WH   | 12/23/14 |
| CHECKED   |      |          |
| ENG APPR. |      |          |
| MFG APPR. |      |          |
| Q.A.      |      |          |
| COMMENTS: |      |          |

**FTEng** Fiber-Tech ENGINEERING  
INC. CUSTOM COMPOSITES

611 ROCK SPRINGS RD.  
ESCONDIDO, CA. 92025  
TOLL FREE 1(888)NEED-FRP

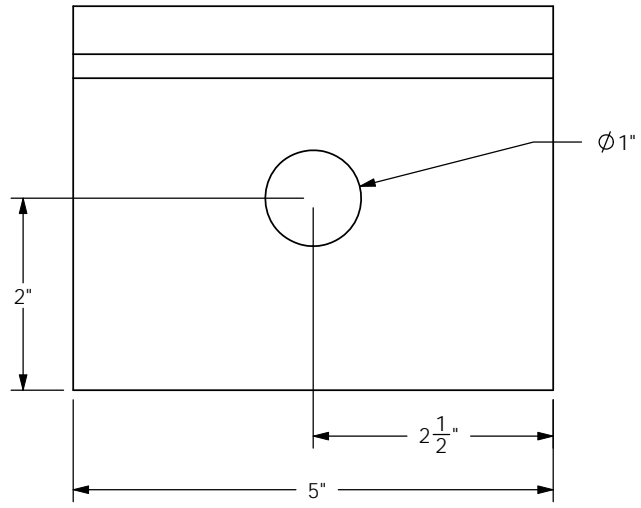
TITLE:  
**WASTECH**  
21201 ITASCA STREET  
CHATSWORTH, CA

|                  |                              |                 |
|------------------|------------------------------|-----------------|
| SIZE<br><b>B</b> | DWG. NO.<br>WT - 14091 - 004 | REV<br><b>B</b> |
| SCALE : NTS      |                              | SHEET 2 OF 3    |

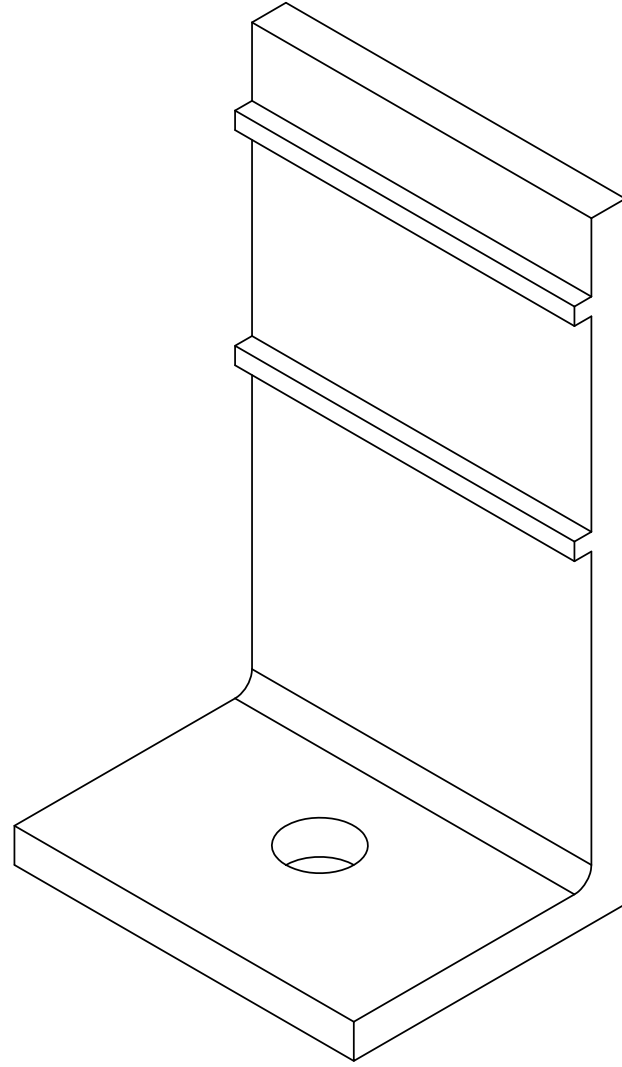
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D

D

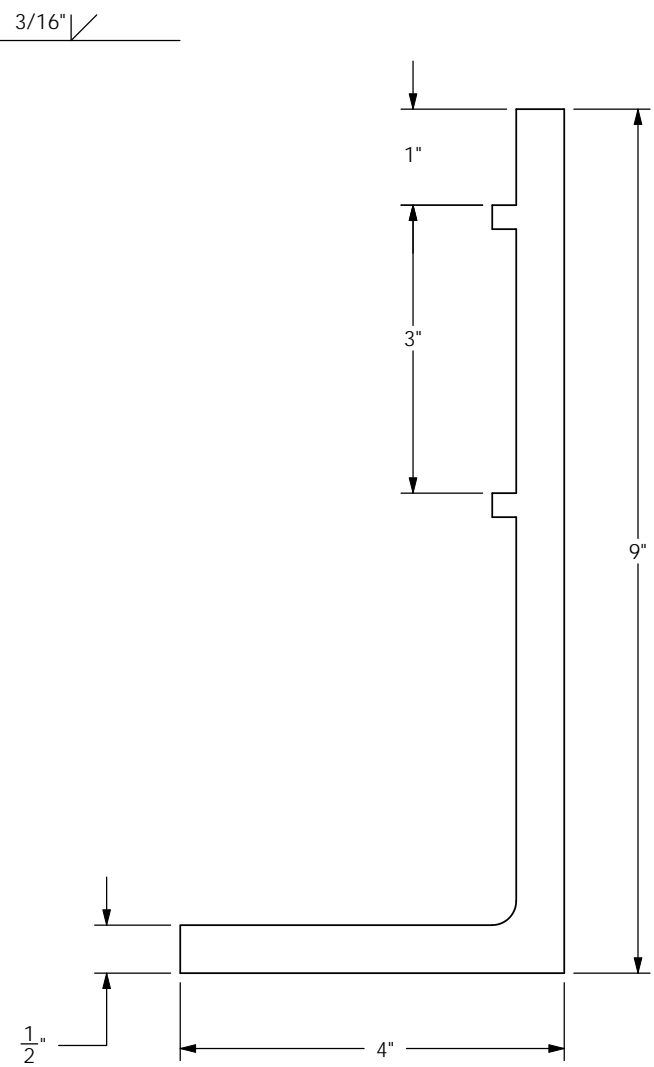
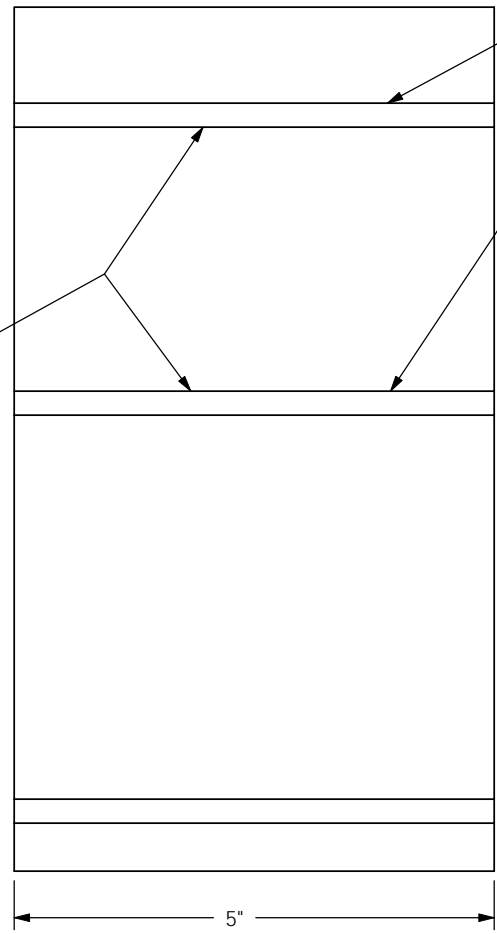


6 REQUIRED MATERIAL 316 SST



C

C



1/4" SQUARE STOCK

B

B

A

A

8 7 6 5 4 3 2 1

|                                                                                                                                            |           |      |                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNLESS OTHERWISE SPECIFIED:                                                                                                                | NAME      | DATE |  611 ROCK SPRINGS RD.<br>ESCONDIDO, CA. 92025<br>TOLL FREE 1(888)NEED-FRP |
| DIMENSIONS ARE IN INCHES<br>TOLERANCES:<br>FRACTIONAL ± 1/8<br>ANGULAR: ± 1 DEGREE<br>TWO PLACE DECIMAL ±0.25<br>THREE PLACE DECIMAL ±0.13 | DRAWN     | WRH  |                                                                                                                                                                |
| INTERPRET GEOMETRIC TOLERANCING PER:                                                                                                       | CHECKED   |      | TITLE:                                                                                                                                                         |
| MATERIAL                                                                                                                                   | ENG APPR. |      | FTE STANDARD DRAWING<br>TYPE I ANCHOR LUG                                                                                                                      |
| FINISH                                                                                                                                     | MFG APPR. |      | SIZE <b>B</b> DWG. NO. FTE-10011-I REV <b>A</b>                                                                                                                |
| DO NOT SCALE DRAWING                                                                                                                       | Q.A.      |      | SCALE : NTS SHEET 3 OF 3                                                                                                                                       |
|                                                                                                                                            | COMMENTS: |      |                                                                                                                                                                |

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TOLL FREE 1-888-NEED-FRP

SERIAL #: WT - 14091 - 001

SERVICE: REACTION WASTEWATER

TANK NUMBER: AWN-TNK-100

DESIGN TEMPERATURE: 120F

SPECIFIC GRAVITY: 1.1

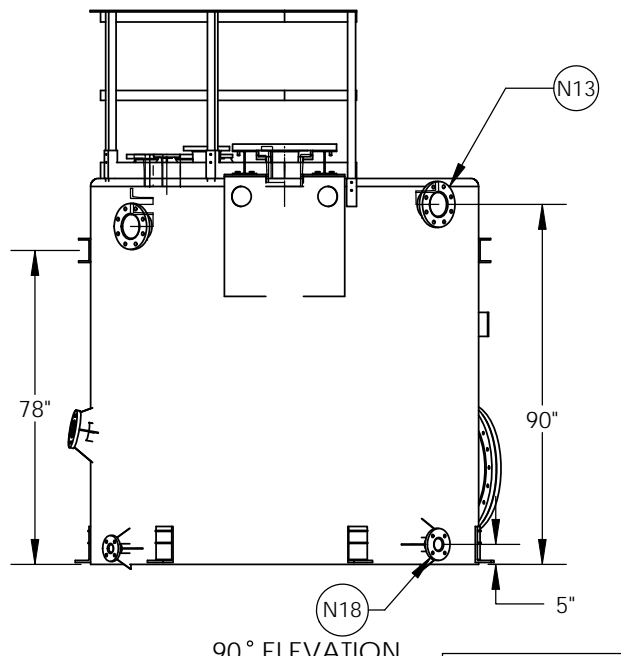
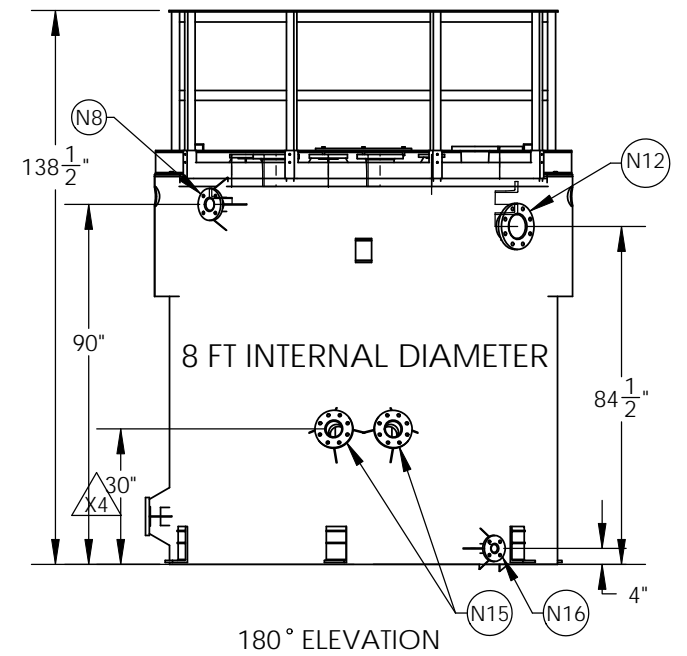
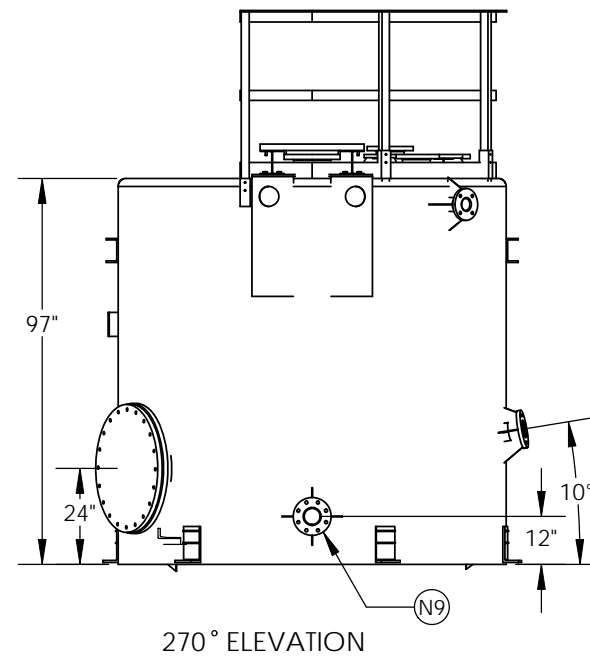
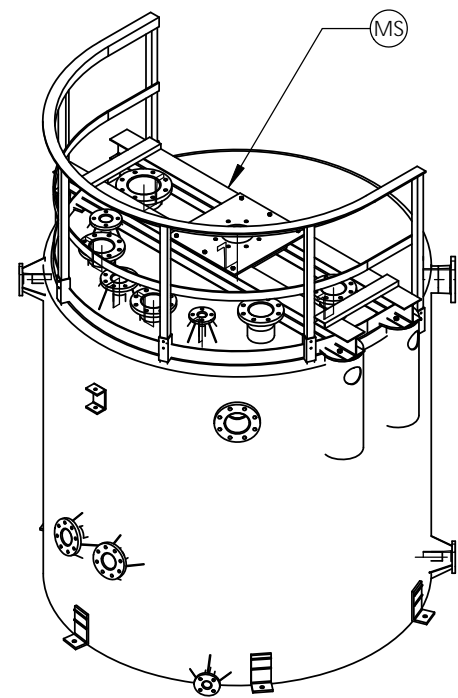
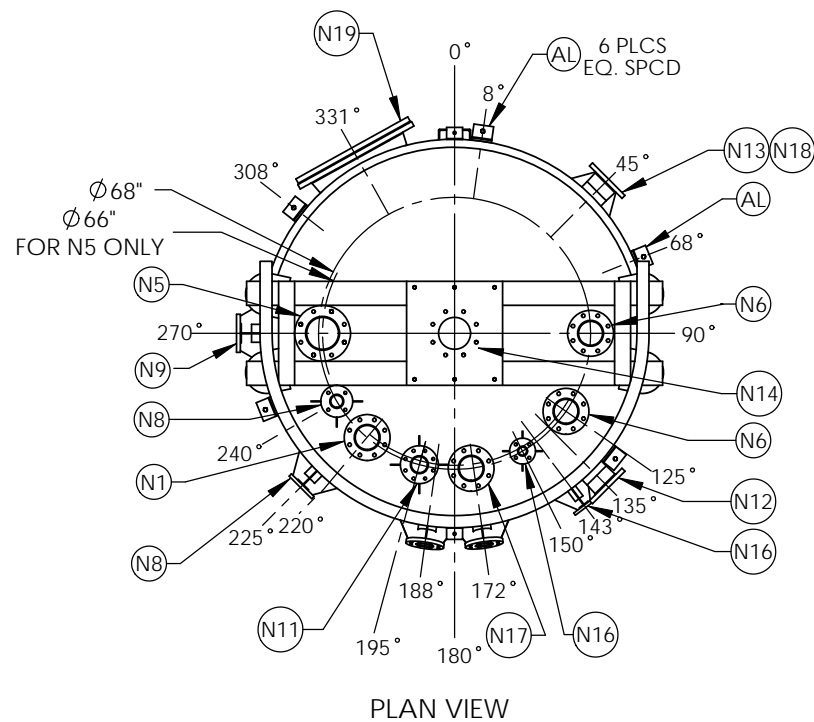
OPERATING PRESSURE: ATMOSPHERIC

MAXIMUM CAPACITY: 3,000 GALLONS

RESIN: HETRON 922

ESTIMATED EMPTY WEIGHT: TBD LBS.

BUILT: JANUARY 2015



| PARTS LIST |      |          |        |                             |                    |      |            |     |
|------------|------|----------|--------|-----------------------------|--------------------|------|------------|-----|
| ITEM NO.   | SIZE | WALL THK | MATL   | SERVICE                     | DESCRIPTION        | PROJ | PSI RATING | QTY |
| N1         | 6"   | TBD      | FRP    | WASTEWATER FROM AWN-TNK-010 | FF FLANGE          | 6"   | 150        | 1   |
| N2         | -    | TBD      | -      | RESERVED                    | NOT ON TANK        | -    | -          | 0   |
| N3         | -    | 5/16"    | -      | RESERVED                    | NOT ON TANK        | -    | -          | 0   |
| N4         | -    | 5/16"    | -      | RESERVED                    | NOT ON TANK        | -    | -          | 0   |
| N5         | 8"   | 5/16"    | FRP    | VIEWPORT                    | FF FLANGE W/COVER  | 6"   | 150        | 1   |
| N6         | 6"   | 5/16"    | FRP    | CHEMICAL INJECTION PORT     | FF FLANGE          | 8"   | 150        | 2   |
| N7         | -    | 1/4"     | -      | RESERVED                    | NOT ON TANK        | -    | -          | 0   |
| N8         | 3"   | -        | FRP    | SPARE                       | FF FLANGE          | 6"   | 150        | 2   |
| N9         | 4"   | -        | FRP    | SPARE                       | FF FLANGE          | 6"   | 150        | 1   |
| N10        | -    | -        | -      | RESERVED                    | NOT ON TANK        | -    | -          | 0   |
| N11        | 4"   | -        | FRP    | VENT                        | FF FLANGE          | 6"   | 150        | 1   |
| N12        | 6"   | -        | FRP    | GRAVITY FLOW TO AWN-TNK-200 | FF FLANGE          | 6"   | 150        | 1   |
| N13        | 6"   | -        | FRP    | OVERFLOW TO AWN-TNK-200     | FF FLANGE          | 6"   | 150        | 1   |
| N14        | 8"   | -        | FRP    | MIXER PORT                  | FF FLANGE          | 6"   | 150        | 1   |
| N15        | 4"   | -        | FRP    | SENSOR PORT                 | FF FLANGE          | 6"   | 150        | 2   |
| N16        | 2"   | -        | FRP    | SENSOR PORT                 | FF FLANGE          | 6"   | 150        | 2   |
| N17        | 6"   | -        | FRP    | SENSOR PORT                 | FF FLANGE          | 6"   | 150        | 1   |
| N18        | 3"   | -        | FRP    | TANK DRAIN                  | FF FLANGE          | 6"   | 150        | 1   |
| N19        | 24"  | -        | FRP    | MANWAY                      | 24" MANWAY W/COVER | 6"   | 25         | 1   |
| -          | -    | -        | -      | -                           | -                  | -    | -          | -   |
| HR         | -    | -        | FRP    | -                           | HANDRAIL ASSY      | -    | -          | 1   |
| MS         | -    | -        | -      | -                           | MIXER SUPPORT ASSY | -    | -          | 1   |
| LL         | -    | -        | 316SST | -                           | LIFTING LUG        | -    | -          | 2   |
| AL         | -    | -        | 316SST | -                           | ANCHOR LUG         | -    | -          | 6   |
| TL         | -    | -        | 304SST | -                           | TANK LABEL         | -    | -          | 1   |
| -          | -    | -        | -      | -                           | -                  | -    | -          | -   |

NOTES:  
 1. BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED  
 2. NOZZLES AND COUPLINGS PROTRUDE 2 INCHES WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.  
 3. ALL FLANGED NOZZLES 4" AND SMALLER ARE REINFORCED WITH FOUR 1/4 INCH THICK GUSSET PLATES  
 4. SEE PLAN VIEW FOR TRUE ORIENTATION  
 5. ALL LIFTING LUGS, ANCHOR LUGS AND FASTENERS ARE STAINLESS STEEL  
 6. MANWAY GASKET MATERIAL IS EPDM

| DESIGN:                    |                               |
|----------------------------|-------------------------------|
| SERVICE:                   | REACTION WASTEWATER TANK      |
| FABRICATION STANDARDS:     | ASTM D 3299 & ASTM D 4097     |
| VISUAL ACCEPTANCE:         | LEVEL II IAW ASTM D2563       |
| FABRICATION METHOD:        | FILAMENT WOUND AND HAND LAYUP |
| SEISMIC ZONE:              | D                             |
| WIND:                      | 115 MPH                       |
| DESIGN ROOF LOAD:          | 250LBS                        |
| DESIGN PRESSURE:           | ATMOSPHERIC                   |
| DESIGN VACUUM:             | ATMOSPHERIC                   |
| MAX DESIGN TEMPERATURE:    | 150 F                         |
| SPECIFIC GRAVITY:          | 1.1                           |
| PRESSURE:                  | ATMOSPHERIC                   |
| MATERIALS OF CONSTRUCTION: | HETRON 922 OR EQUAL           |
| CURE SYSTEM:               | MEKP                          |
| CORROSION BARRIER:         | 100 MILS NEXUS VEIL           |
| COLOR:                     | WHITE GEL COAT W/UV INHIBITOR |
| ESTIMATED EMPTY WEIGHT:    | 1,000 LBS                     |
| TANK CAPACITY:             | 3,000 GALLONS                 |

| REVISIONS |                                                                     |           |
|-----------|---------------------------------------------------------------------|-----------|
| REV       | DESCRIPTION                                                         | DATE      |
| X2        | RELEASE FOR APPROVAL                                                | 1/22/2015 |
| X3        | SYNCD NOZZLE SCHEDULE AND NOTES TO WASTECH DRAWING REV 3            | 2/2/2015  |
| X4        | 30" DIMENSION FOR N15 NOZZLES IN 180 DEGREE ELEVATION VIEW, WAS 33" | 2/2/2015  |

UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN INCHES  
 TOLERANCES:  
 FRACTIONAL ± 1/8  
 ANGULAR: ± 1 DEGREE  
 TWO PLACE DECIMAL ±0.25  
 THREE PLACE DECIMAL ±0.13

|           | NAME | DATE     |
|-----------|------|----------|
| DRAWN     | WH   | 12/08/14 |
| CHECKED   |      |          |
| ENG APPR. |      |          |
| MFG APPR. |      |          |
| Q.A.      |      |          |
| COMMENTS: |      |          |

611 ROCK SPRINGS RD.  
 ESCONDIDO, CA. 92025  
 TOLL FREE 1(888)NEED-FRP

**FT Eng** Fiber-Tech ENGINEERING Inc. CUSTOM COMPOSITES

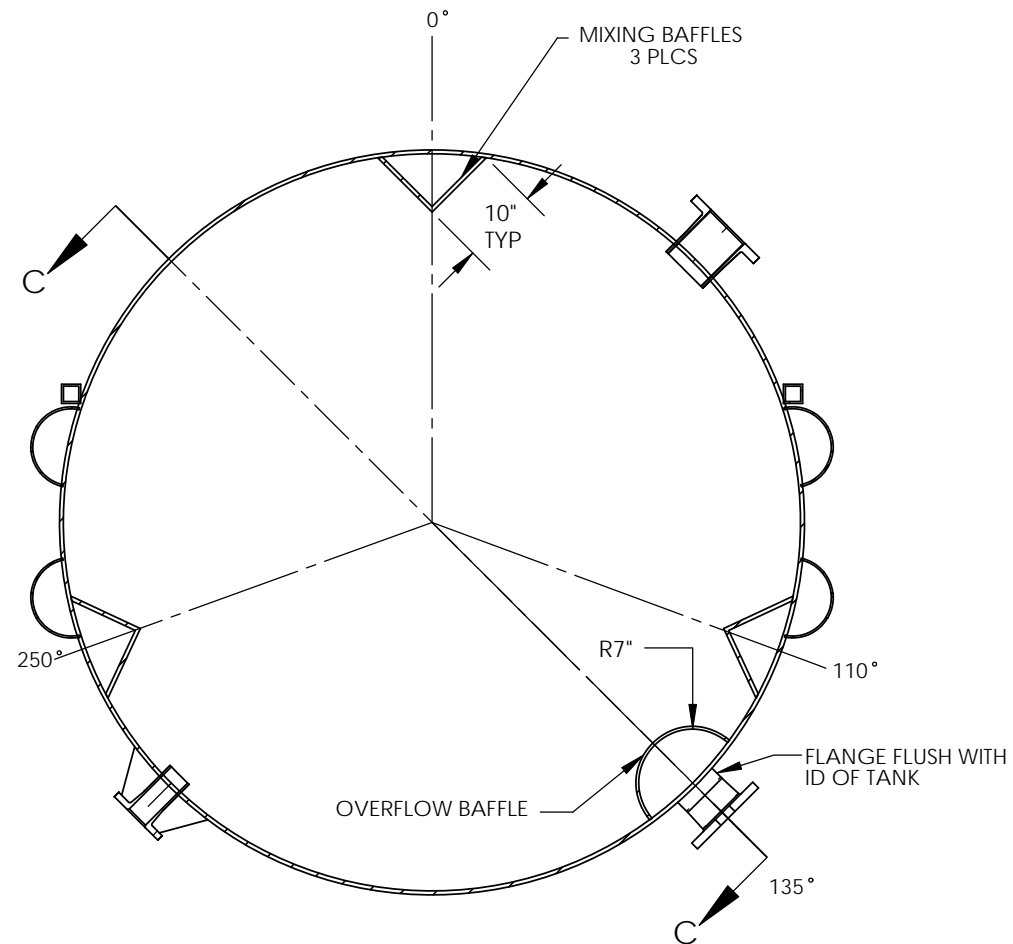
TITLE:  
**WASTECH**  
 21201 ITASCA STREET  
 CHATSWORTH, CA  
 REACTION WASTEWATER TANK

SIZE **B** DWG. NO. WT - 14091 - 001 REV **X4**

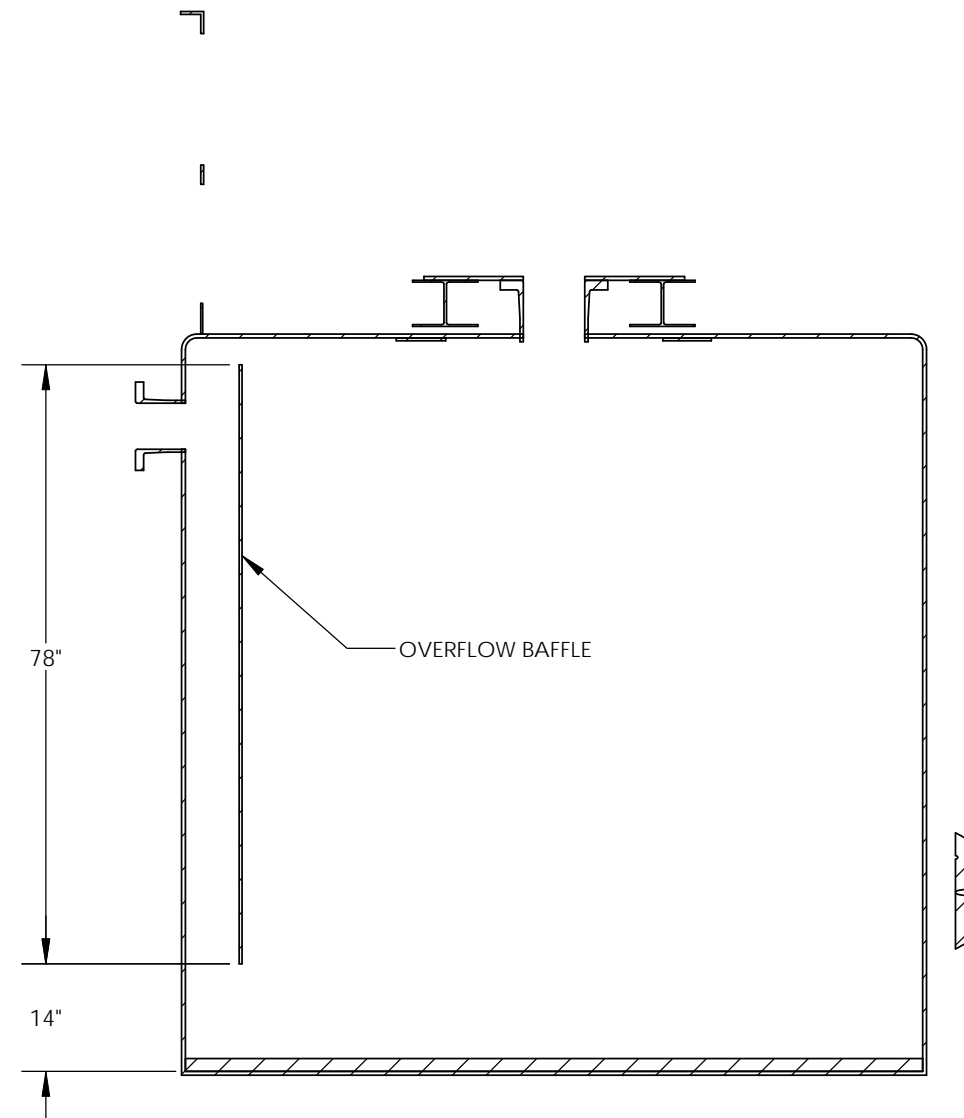
SCALE : NTS SHEET 1 OF 4

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DO NOT SCALE DRAWING



SECTION A-A  
SCALE 1 : 25



45° ELEVATION

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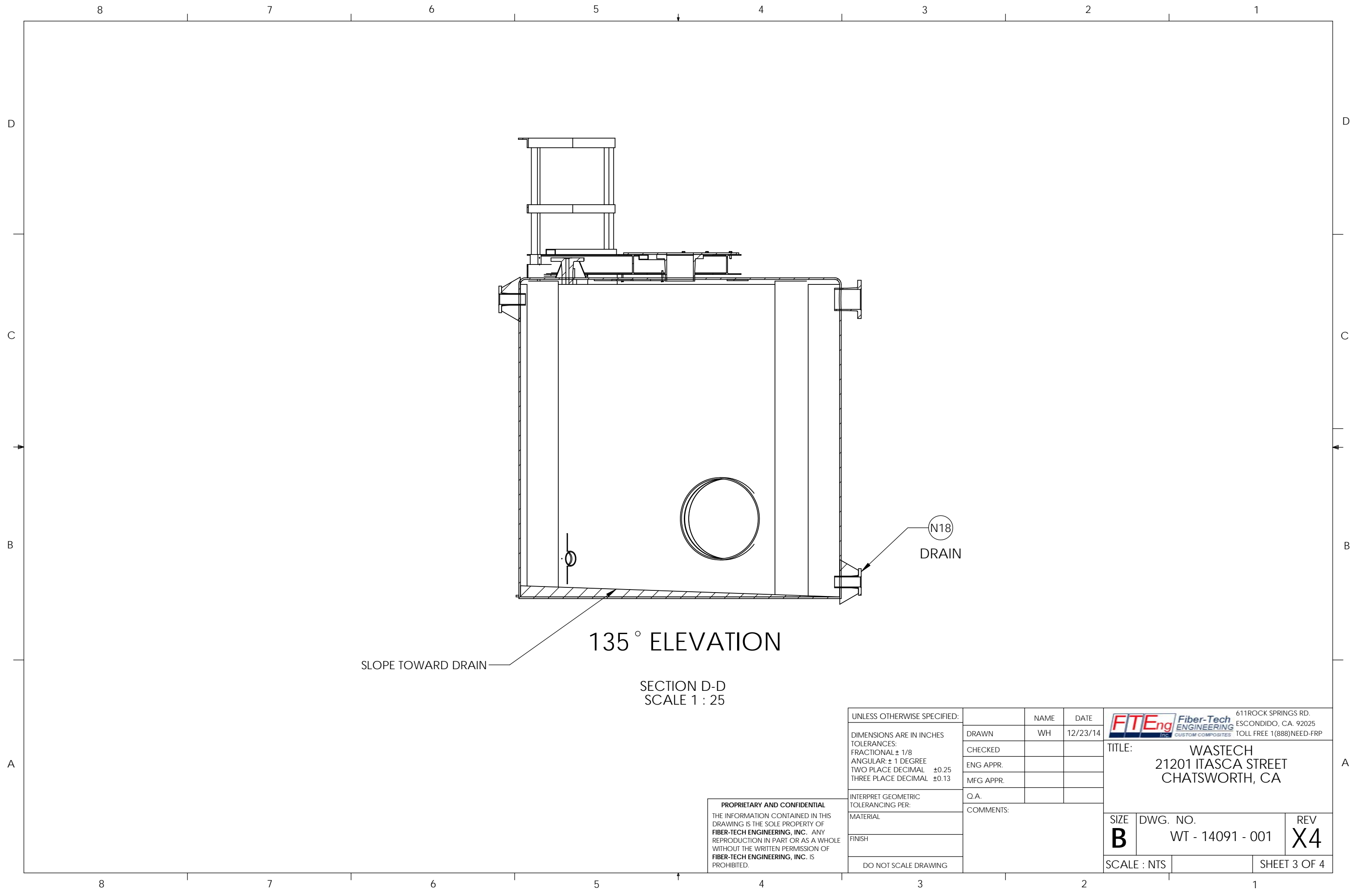
|                                      |           |      |          |
|--------------------------------------|-----------|------|----------|
| UNLESS OTHERWISE SPECIFIED:          |           | NAME | DATE     |
| DIMENSIONS ARE IN INCHES             | DRAWN     | WH   | 12/23/14 |
| TOLERANCES:                          | CHECKED   |      |          |
| FRACTIONAL ± 1/8                     | ENG APPR. |      |          |
| ANGULAR: ± 1 DEGREE                  | MFG APPR. |      |          |
| TWO PLACE DECIMAL ±0.25              | Q.A.      |      |          |
| THREE PLACE DECIMAL ±0.13            | COMMENTS: |      |          |
| INTERPRET GEOMETRIC TOLERANCING PER: |           |      |          |
| MATERIAL                             |           |      |          |
| FINISH                               |           |      |          |
| DO NOT SCALE DRAWING                 |           |      |          |

**FTEng** Fiber-Tech ENGINEERING  
INC. CUSTOM COMPOSITES  
611 ROCK SPRINGS RD.  
ESCONDIDO, CA. 92025  
TOLL FREE 1(888)NEED-FRP

TITLE:  
**WASTECH**  
21201 ITASCA STREET  
CHATSWORTH, CA

|                  |                              |                  |
|------------------|------------------------------|------------------|
| SIZE<br><b>B</b> | DWG. NO.<br>WT - 14091 - 001 | REV<br><b>X4</b> |
|------------------|------------------------------|------------------|

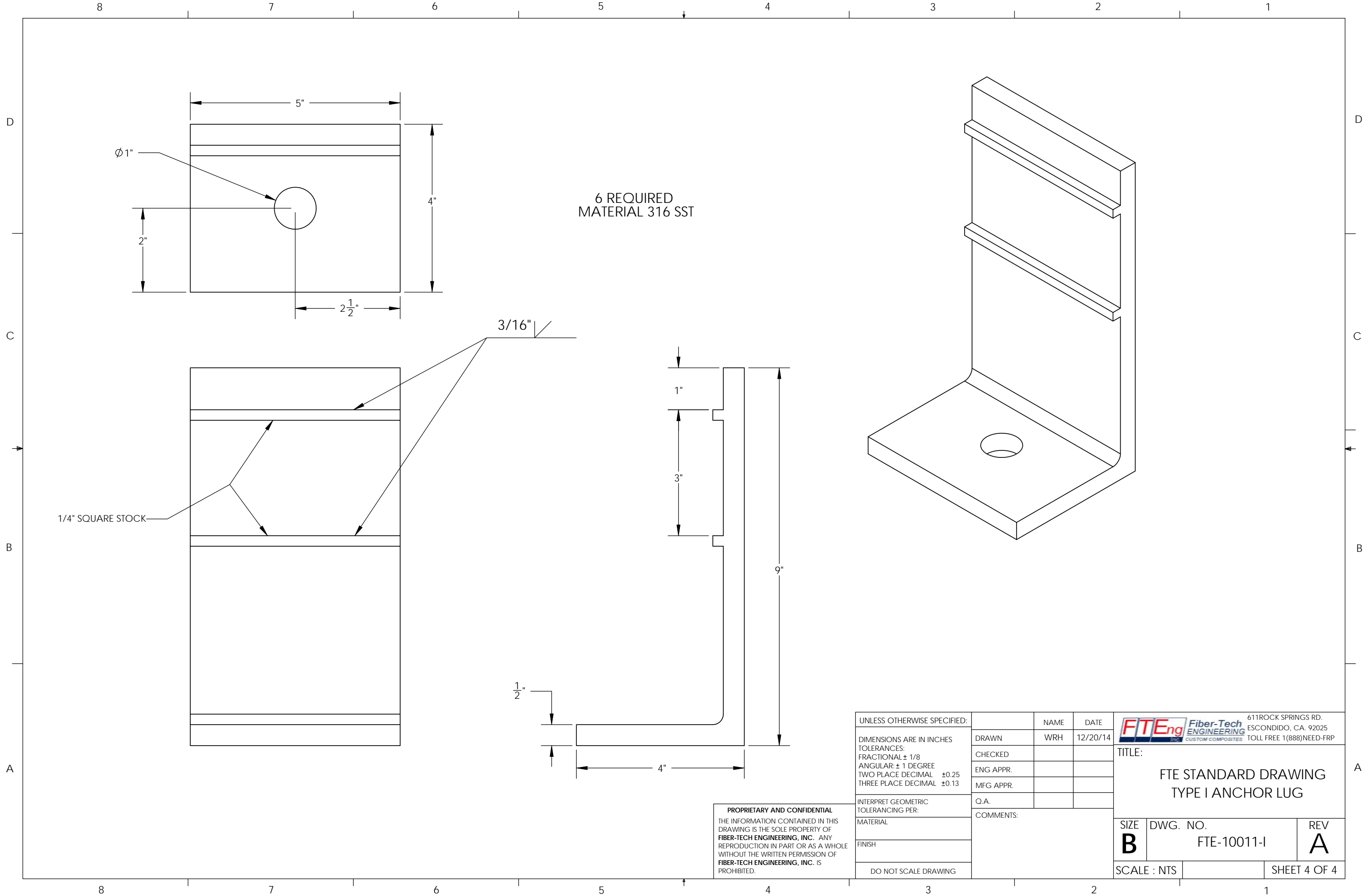
SCALE : NTS SHEET 2 OF 4



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|                                      |           |      |          |
|--------------------------------------|-----------|------|----------|
| UNLESS OTHERWISE SPECIFIED:          |           | NAME | DATE     |
| DIMENSIONS ARE IN INCHES             | DRAWN     | WH   | 12/23/14 |
| TOLERANCES:                          | CHECKED   |      |          |
| FRACTIONAL ± 1/8                     | ENG APPR. |      |          |
| ANGULAR: ± 1 DEGREE                  | MFG APPR. |      |          |
| TWO PLACE DECIMAL ±0.25              |           |      |          |
| THREE PLACE DECIMAL ±0.13            |           |      |          |
| INTERPRET GEOMETRIC TOLERANCING PER: | Q.A.      |      |          |
| MATERIAL                             | COMMENTS: |      |          |
| FINISH                               |           |      |          |
| DO NOT SCALE DRAWING                 |           |      |          |

|                                                                                       |                                     |                                                                          |  |
|---------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------|--|
|  |                                     | 611 ROCK SPRINGS RD.<br>ESCONDIDO, CA. 92025<br>TOLL FREE 1(888)NEED-FRP |  |
| <b>TITLE:</b><br>WASTECH<br>21201 ITASCA STREET<br>CHATSWORTH, CA                     |                                     |                                                                          |  |
| <b>SIZE</b><br><b>B</b>                                                               | <b>DWG. NO.</b><br>WT - 14091 - 001 | <b>REV</b><br><b>X4</b>                                                  |  |
| <b>SCALE :</b> NTS                                                                    |                                     | <b>SHEET</b> 3 OF 4                                                      |  |



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|                                      |           |      |          |
|--------------------------------------|-----------|------|----------|
| UNLESS OTHERWISE SPECIFIED:          |           | NAME | DATE     |
| DIMENSIONS ARE IN INCHES             | DRAWN     | WRH  | 12/20/14 |
| TOLERANCES:                          | CHECKED   |      |          |
| FRACTIONAL $\pm 1/8$                 | ENG APPR. |      |          |
| ANGULAR: $\pm 1$ DEGREE              | MFG APPR. |      |          |
| TWO PLACE DECIMAL $\pm 0.25$         | Q.A.      |      |          |
| THREE PLACE DECIMAL $\pm 0.13$       | COMMENTS: |      |          |
| INTERPRET GEOMETRIC TOLERANCING PER: |           |      |          |
| MATERIAL                             |           |      |          |
| FINISH                               |           |      |          |
| DO NOT SCALE DRAWING                 |           |      |          |

**FTEng** Fiber-Tech ENGINEERING  
INC. CUSTOM COMPOSITES

611 ROCK SPRINGS RD.  
 ESCONDIDO, CA. 92025  
 TOLL FREE 1(888)NEED-FRP

TITLE:  
**FTE STANDARD DRAWING  
 TYPE I ANCHOR LUG**

|                  |                         |                 |
|------------------|-------------------------|-----------------|
| SIZE<br><b>B</b> | DWG. NO.<br>FTE-10011-I | REV<br><b>A</b> |
| SCALE : NTS      |                         | SHEET 4 OF 4    |



TOLL FREE 1-888-NEED-FRP

SERIAL #: WT - 14091 - 002

SERVICE: REACTION WASTEWATER

TANK NUMBER: AWN-TNK-200

DESIGN TEMPERATURE: 120F

SPECIFIC GRAVITY: 1.1

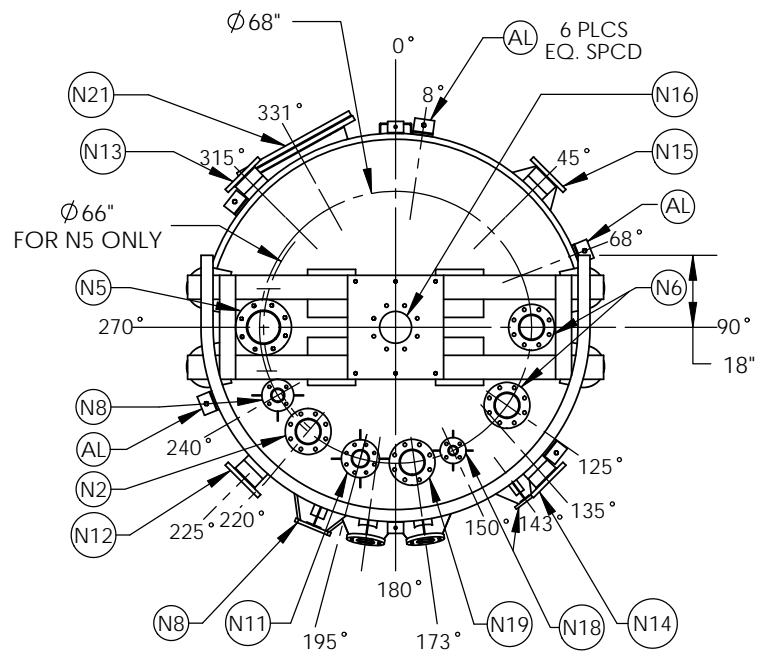
OPERATING PRESSURE: ATMOSPHERIC

MAXIMUM CAPACITY: 3,000 GALLONS

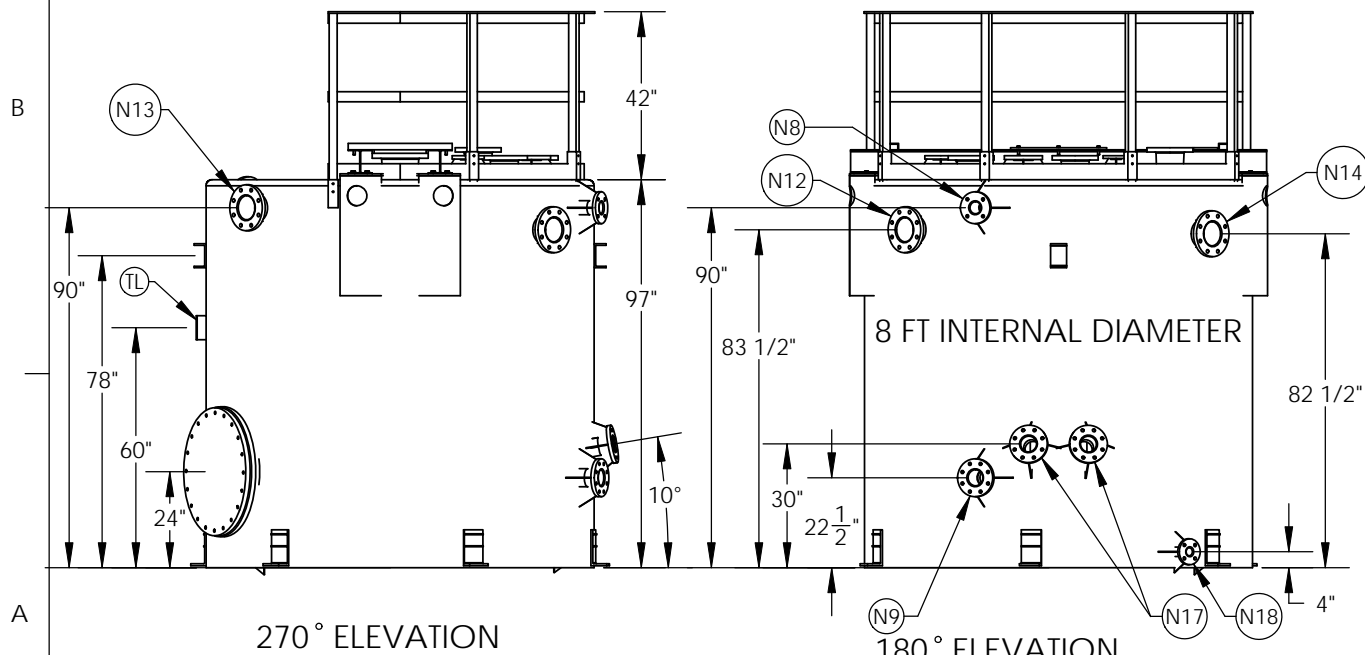
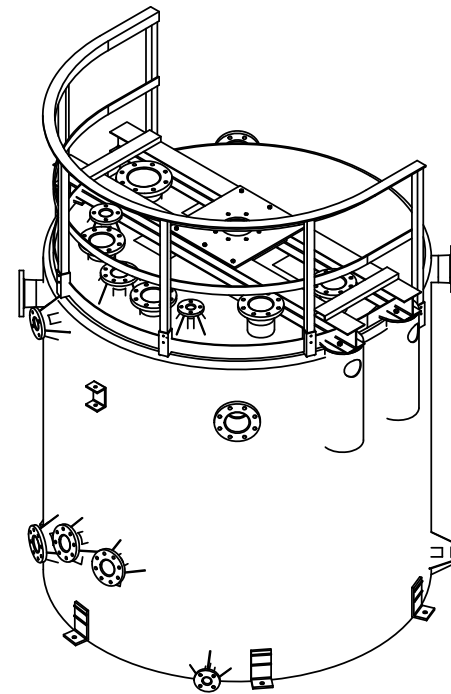
RESIN: HETRON 922

ESTIMATED EMPTY WEIGHT: 1,200 LBS.

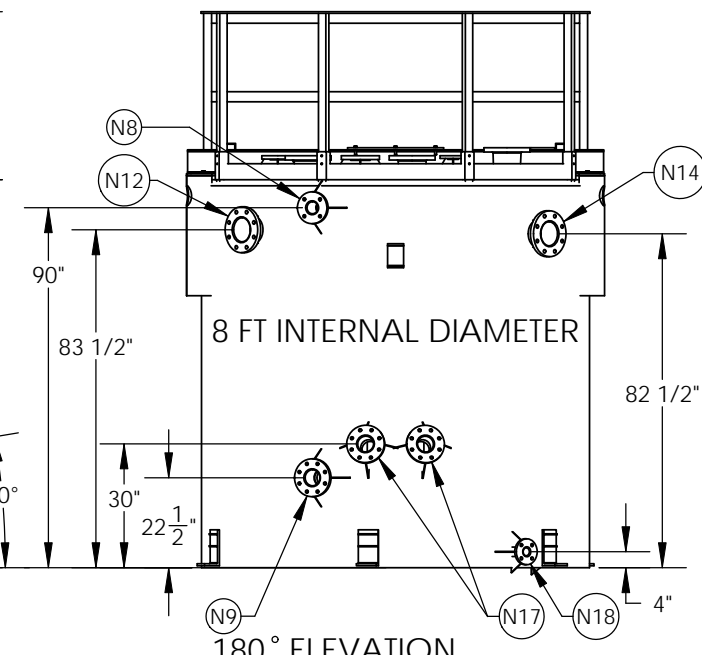
BUILT: JANUARY 2015



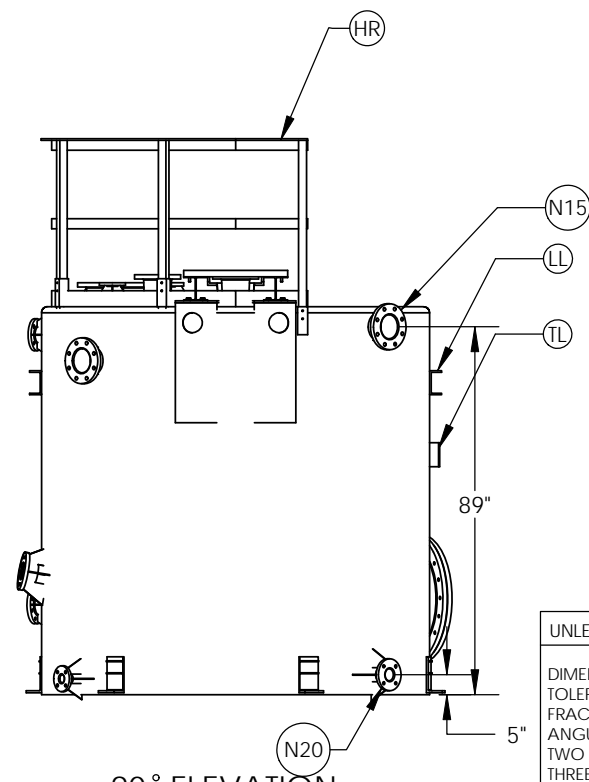
PLAN VIEW



270° ELEVATION



180° ELEVATION



90° ELEVATION

| ITEM NO. | SIZE | MATL   | SERVICE                       | DESCRIPTION         | PROJ | PSI RATING | QTY |
|----------|------|--------|-------------------------------|---------------------|------|------------|-----|
| N1       | -    | -      | RESERVED                      | NOT ON TANK         | -    | -          | 0   |
| N2       | 6"   | FRP    | SPARE                         | FF FLANGE           | 6"   | 150        | 1   |
| N3       | -    | -      | RESERVED                      | NOT ON TANK         | -    | -          | 0   |
| N4       | -    | -      | RESERVED                      | NOT ON TANK         | -    | -          | 0   |
| N5       | 8"   | FRP    | VIEWPORT                      | 8" FLANGE W/ COVER  | 6"   | 150        | 1   |
| N6       | 6"   | FRP    | CHEMICAL INJECTION PORT       | FF FLANGE           | 8"   | 150        | 2   |
| N7       | -    | -      | RESERVED                      | NOT ON TANK         | -    | -          | 0   |
| N8       | 3"   | FRP    | SPARE                         | FF FLANGE           | 6"   | 150        | 2   |
| N9       | 4"   | FRP    | SPARE                         | FF FLANGE           | 6"   | 150        | 1   |
| N10      | -    | -      | RESERVED                      | NOT ON TANK         | -    | -          | 0   |
| N11      | 4"   | FRP    | VENT                          | FF FLANGE           | 6"   | 150        | 1   |
| N12      | 6"   | FRP    | GRAVITY FLOW FROM AWN-TNK-100 | FF FLANGE           | 6"   | 150        | 1   |
| N13      | 6"   | FRP    | OVERFLOW FROM AWN-TNK-100     | FF FLANGE           | 6"   | 150        | 1   |
| N14      | 6"   | FRP    | GRAVITY FLOW TO AWN-TNK-300   | FF FLANGE           | 6"   | 150        | 1   |
| N15      | 6"   | FRP    | OVERFLOW TO AWN-TNK-300       | FF FLANGE           | 6"   | 150        | 1   |
| N16      | 8"   | FRP    | MIXER PORT (SEE NOTES FOR LO  | FF FLANGE           | 6"   | 150        | 1   |
| N17      | 8"   | FRP    | SENSOR PORT                   | FF FLANGE           | 6"   | 150        | 2   |
| N18      | 2"   | FRP    | SENSOR PORT                   | FF FLANGE           | 6"   | 150        | 2   |
| N19      | 6"   | FRP    | SENSOR PORT                   | FF FLANGE           | 6"   | 150        | 1   |
| N20      | 3"   | FRP    | TANK DRAIN                    | FF FLANGE           | 6"   | 150        | 1   |
| N21      | 24"  | FRP    | MANWAY                        | 24" FLANGE W/ COVER | 6"   | 25         | 1   |
| -        | -    | -      | -                             | -                   | -    | -          | -   |
| HR       | -    | FRP    | -                             | HANDRAIL ASSY       | -    | -          | 1   |
| MS       | -    | -      | -                             | MIXER SUPPORT ASSY  | -    | -          | 1   |
| LL       | -    | 316SST | -                             | LIFTING LUG         | -    | -          | 2   |
| AL       | -    | 316SST | -                             | ANCHOR LUG          | -    | -          | 6   |
| TL       | -    | 304SST | -                             | TANK LABEL          | -    | -          | 1   |
| -        | -    | -      | -                             | -                   | -    | -          | -   |

NOTES:  
 1. BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED  
 2. NOZZLES AND COUPLINGS PROTRUDE 2 INCHES WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.  
 3. ALL FLANGED NOZZLES 4" AND SMALLER ARE REINFORCED WITH FOUR 1/4 INCH THICK GUSSET PLATE  
 4. SEE PLAN VIEW FOR TRUE ORIENTATION  
 5. ALL LIFTING LUGS, ANCHOR LUGS AND FASTENERS ARE STAINLESS STEEL  
 6. MANWAY GASKET MATERIAL IS EPDM

| DESIGN:                    |                               |
|----------------------------|-------------------------------|
| SERVICE:                   | REACTION WASTEWATER TANK      |
| FABRICATION STANDARDS:     | ASTM D 3299 & ASTM D 4097     |
| VISUAL ACCEPTANCE:         | LEVEL II IAW ASTM D2563       |
| FABRICATION METHOD:        | FILAMENT WOUND AND HAND LAYUP |
| SEISMIC ZONE:              | D                             |
| WIND:                      | 115 MPH                       |
| DESIGN ROOF LOAD:          | 250LBS                        |
| DESIGN PRESSURE:           | ATMOSPHERIC                   |
| DESIGN VACUUM:             | ATMOSPHERIC                   |
| MAX DESIGN TEMPERATURE:    | 150 F                         |
| SPECIFIC GRAVITY:          | 1.1                           |
| PRESSURE:                  | ATMOSPHERIC                   |
| MATERIALS OF CONSTRUCTION: | HETRON 922 OR EQUAL           |
| CURE SYSTEM:               | MEKP                          |
| CORROSION BARRIER:         | 100 MILS NEXUS VEIL           |
| COLOR:                     | WHITE GEL COAT W/UV INHIBITOR |
| ESTIMATED EMPTY WEIGHT:    | 1,000 LBS                     |
| TANK CAPACITY:             | 3,000 GALLONS                 |

| REVISIONS |                                                           |           |
|-----------|-----------------------------------------------------------|-----------|
| REV       | DESCRIPTION                                               | DATE      |
| X2        | RELEASE FOR APPROVAL                                      | 1/22/2015 |
| X3        | SYNCED NOZZLE SCHEDULE AND NOTES TO WASTECH DRAWING REV 3 | 2/2/2015  |
| X4        | DIMENSION AND NOTED CLARIFICATION                         | 2/4/2015  |

UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN INCHES  
 TOLERANCES:  
 FRACTIONAL ± 1/8  
 ANGULAR: ± 1 DEGREE  
 TWO PLACE DECIMAL ±0.25  
 THREE PLACE DECIMAL ±0.13

|           | NAME | DATE     |
|-----------|------|----------|
| DRAWN     | WH   | 12/08/14 |
| CHECKED   |      |          |
| ENG APPR. |      |          |
| MFG APPR. |      |          |
| Q.A.      |      |          |
| COMMENTS: |      |          |

611 ROCK SPRINGS RD.  
 ESCONDIDO, CA. 92025  
 TOLL FREE 1(888)NEED-FRP

**FTEng** Fiber-Tech ENGINEERING Inc. CUSTOM COMPOSITES

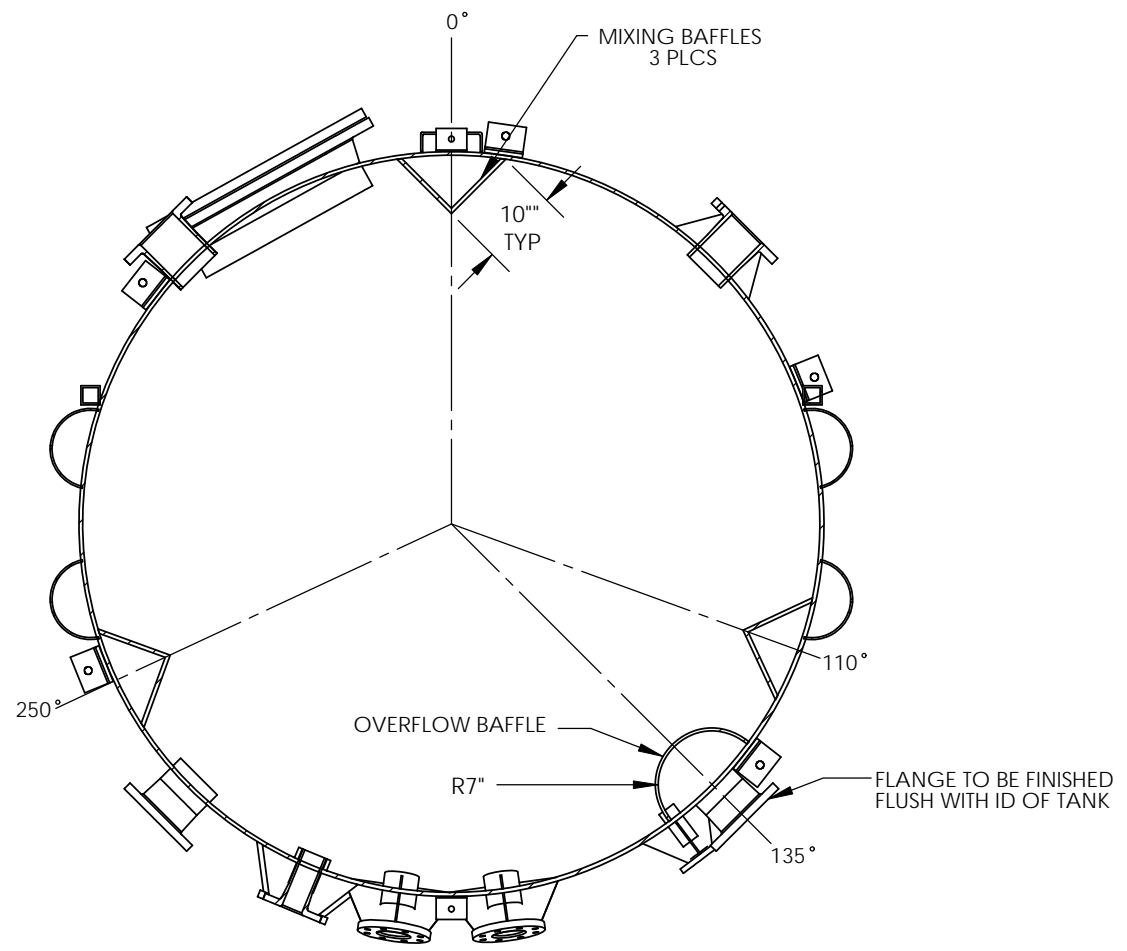
TITLE:  
 WASTECH  
 21201 ITASCA STREET  
 CHATSWORTH, CA  
 REACTION WASTEWATER TANK

|          |                  |           |
|----------|------------------|-----------|
| SIZE     | DWG. NO.         | REV       |
| <b>B</b> | WT - 14091 - 002 | <b>X4</b> |

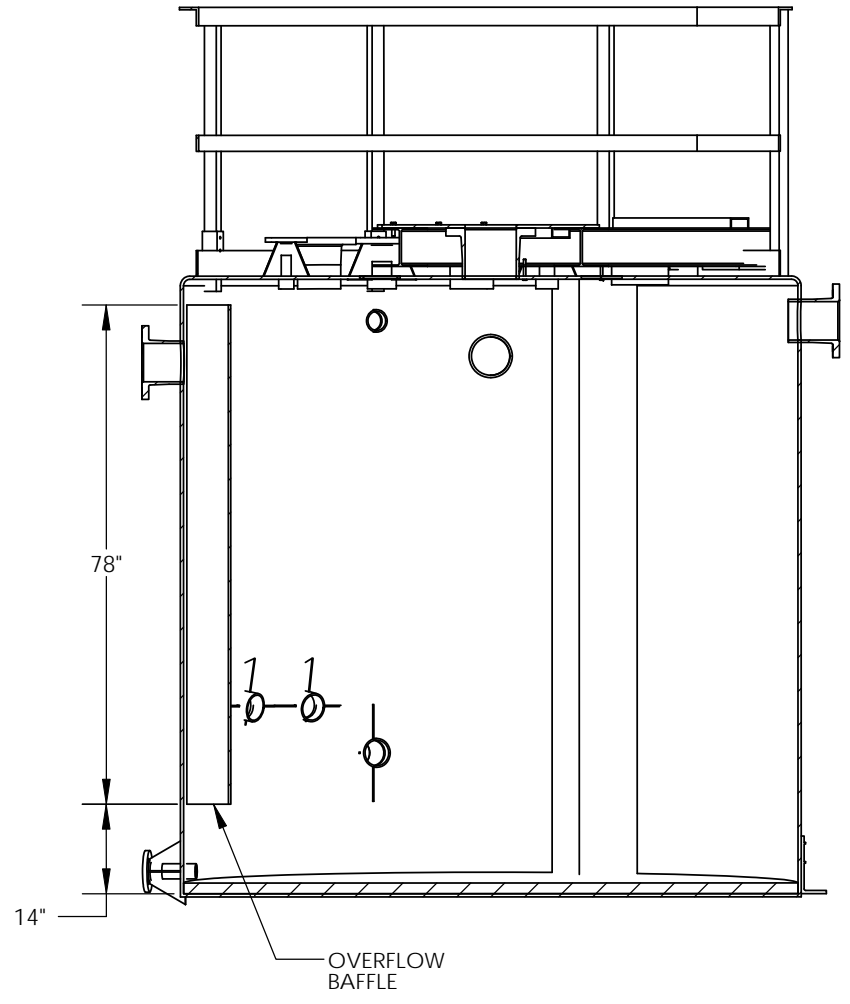
SCALE : NTS SHEET 1 OF 4

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DO NOT SCALE DRAWING



SECTION A-A  
SCALE 1 : 25



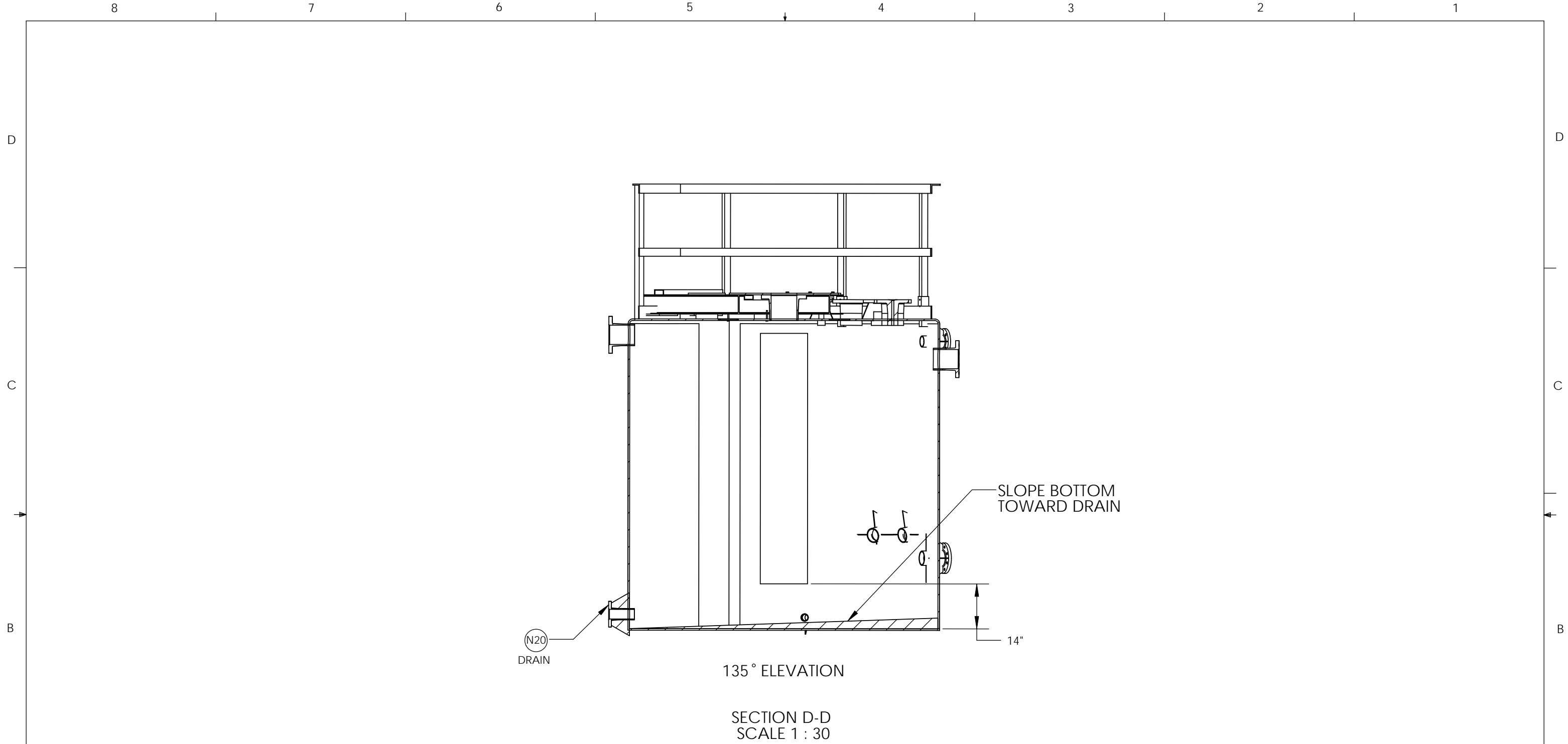
SECTION B-B  
SCALE 1 : 30

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|                                      |           |      |
|--------------------------------------|-----------|------|
| UNLESS OTHERWISE SPECIFIED:          | NAME      | DATE |
| DIMENSIONS ARE IN INCHES             | DRAWN     | WH   |
| TOLERANCES:                          | CHECKED   |      |
| FRACTIONAL ± 1/8                     | ENG APPR. |      |
| ANGULAR: ± 1 DEGREE                  | MFG APPR. |      |
| TWO PLACE DECIMAL ±0.25              | Q.A.      |      |
| THREE PLACE DECIMAL ±0.13            | COMMENTS: |      |
| INTERPRET GEOMETRIC TOLERANCING PER: |           |      |
| MATERIAL                             |           |      |
| FINISH                               |           |      |
| DO NOT SCALE DRAWING                 |           |      |

|                                                                   |                                     |                                                                          |
|-------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------|
|                                                                   |                                     | 611 ROCK SPRINGS RD.<br>ESCONDIDO, CA. 92025<br>TOLL FREE 1(888)NEED-FRP |
| <b>TITLE:</b><br>WASTECH<br>21201 ITASCA STREET<br>CHATSWORTH, CA |                                     |                                                                          |
| <b>SIZE</b><br><b>B</b>                                           | <b>DWG. NO.</b><br>WT - 14091 - 002 | <b>REV</b><br><b>X4</b>                                                  |
| <b>SCALE :</b> NTS                                                |                                     | <b>SHEET</b> 2 OF 4                                                      |





135° ELEVATION

SECTION D-D  
SCALE 1 : 30

|                                      |           |      |
|--------------------------------------|-----------|------|
| UNLESS OTHERWISE SPECIFIED:          | NAME      | DATE |
| DIMENSIONS ARE IN INCHES             | DRAWN     | WH   |
| TOLERANCES:                          | CHECKED   |      |
| FRACTIONAL ± 1/8                     | ENG APPR. |      |
| ANGULAR: ± 1 DEGREE                  | MFG APPR. |      |
| TWO PLACE DECIMAL ±0.25              | Q.A.      |      |
| THREE PLACE DECIMAL ±0.13            | COMMENTS: |      |
| INTERPRET GEOMETRIC TOLERANCING PER: |           |      |
| MATERIAL                             |           |      |
| FINISH                               |           |      |
| DO NOT SCALE DRAWING                 |           |      |


 611 ROCK SPRINGS RD.  
 ESCONDIDO, CA. 92025  
 TOLL FREE 1(888)NEED-FRP

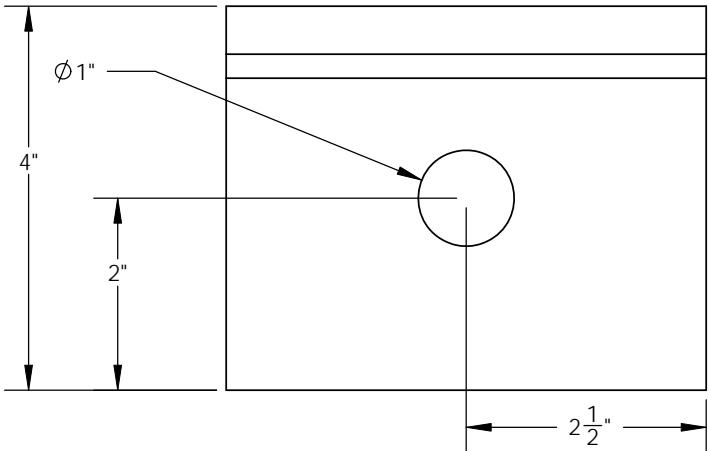
**TITLE:**  
 WASTECH  
 21201 ITASCA STREET  
 CHATSWORTH, CA

|                  |                              |                  |
|------------------|------------------------------|------------------|
| SIZE<br><b>B</b> | DWG. NO.<br>WT - 14091 - 002 | REV<br><b>X4</b> |
| SCALE : NTS      |                              | SHEET 3 OF 4     |

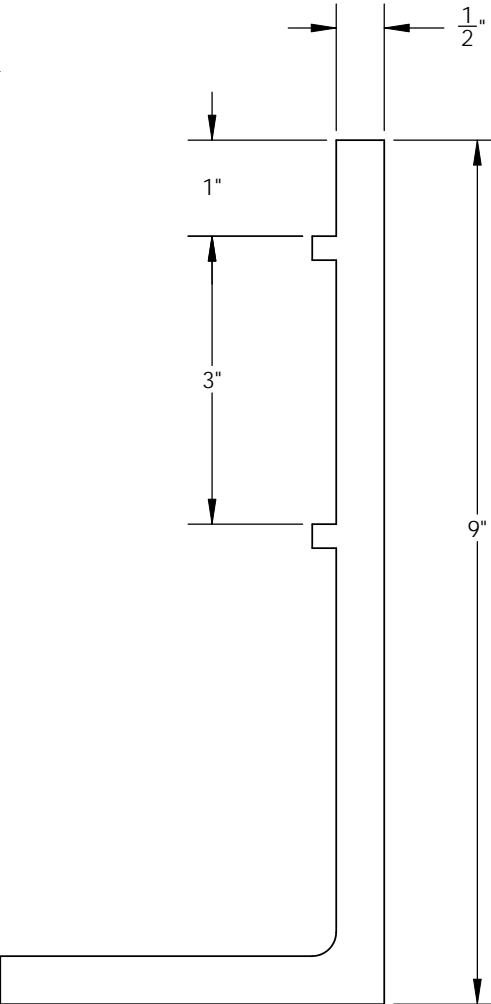
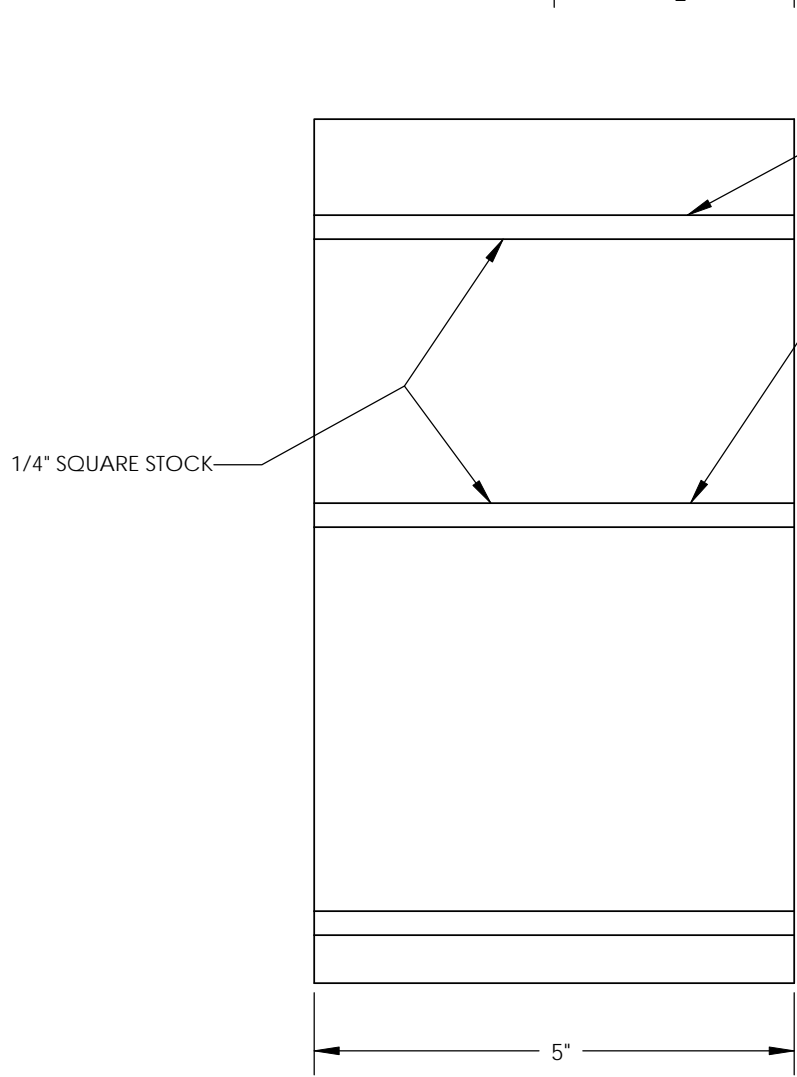
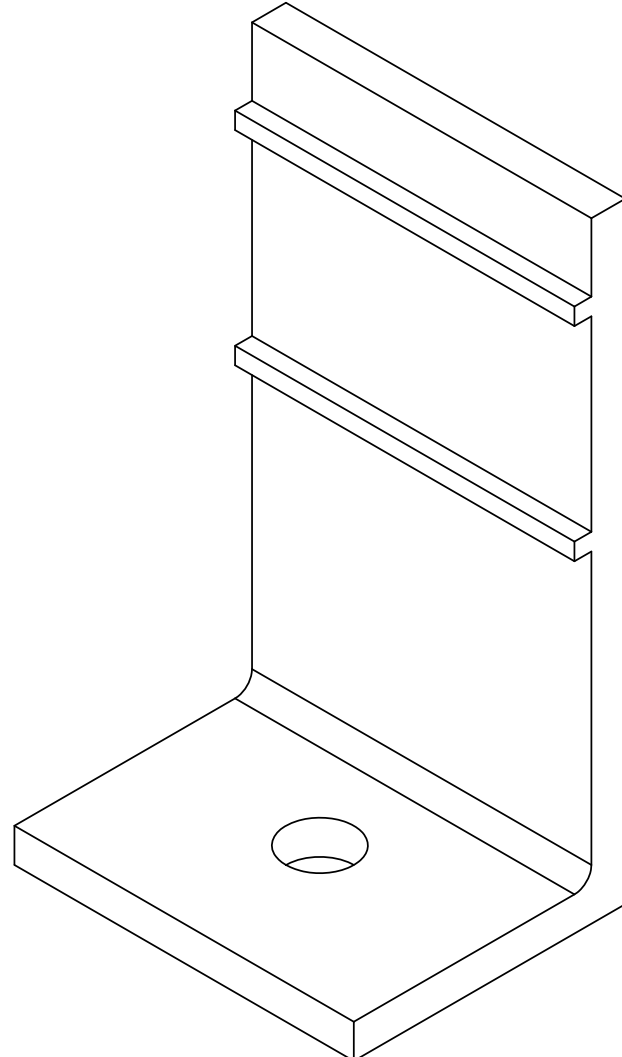
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8 7 6 5 4 3 2 1

D  
C  
B  
A



6 REQUIRED MATERIAL 316 SST



|                                                                                                                                                              |  |           |          |                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNLESS OTHERWISE SPECIFIED:                                                                                                                                  |  | NAME      | DATE     |  611 ROCK SPRINGS RD.<br>ESCONDIDO, CA. 92025<br>TOLL FREE 1(888)NEED-FRP |
| DIMENSIONS ARE IN INCHES<br>TOLERANCES:<br>FRACTIONAL $\pm 1/8$<br>ANGULAR: $\pm 1$ DEGREE<br>TWO PLACE DECIMAL $\pm 0.25$<br>THREE PLACE DECIMAL $\pm 0.13$ |  | DRAWN     | 12/20/14 |                                                                                                                                                                |
| INTERPRET GEOMETRIC TOLERANCING PER:                                                                                                                         |  | CHECKED   |          | TITLE:<br><b>FTE STANDARD DRAWING<br/>         TYPE I ANCHOR LUG</b>                                                                                           |
| MATERIAL                                                                                                                                                     |  | ENG APPR. |          |                                                                                                                                                                |
| FINISH                                                                                                                                                       |  | MFG APPR. |          | SIZE <b>B</b> DWG. NO. FTE-10011-I REV <b>A</b>                                                                                                                |
| DO NOT SCALE DRAWING                                                                                                                                         |  | Q.A.      |          | SCALE : NTS SHEET 4 OF 4                                                                                                                                       |
|                                                                                                                                                              |  | COMMENTS: |          |                                                                                                                                                                |

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8 7 6 5 4 3 2 1



TOLL FREE 1-888-NEED-FRP

SERIAL #: WT - 14091 - 003

SERVICE: REACTION WASTEWATER

TANK NUMBER: AWN-TNK-300

DESIGN TEMPERATURE: 120F

SPECIFIC GRAVITY: 1.1

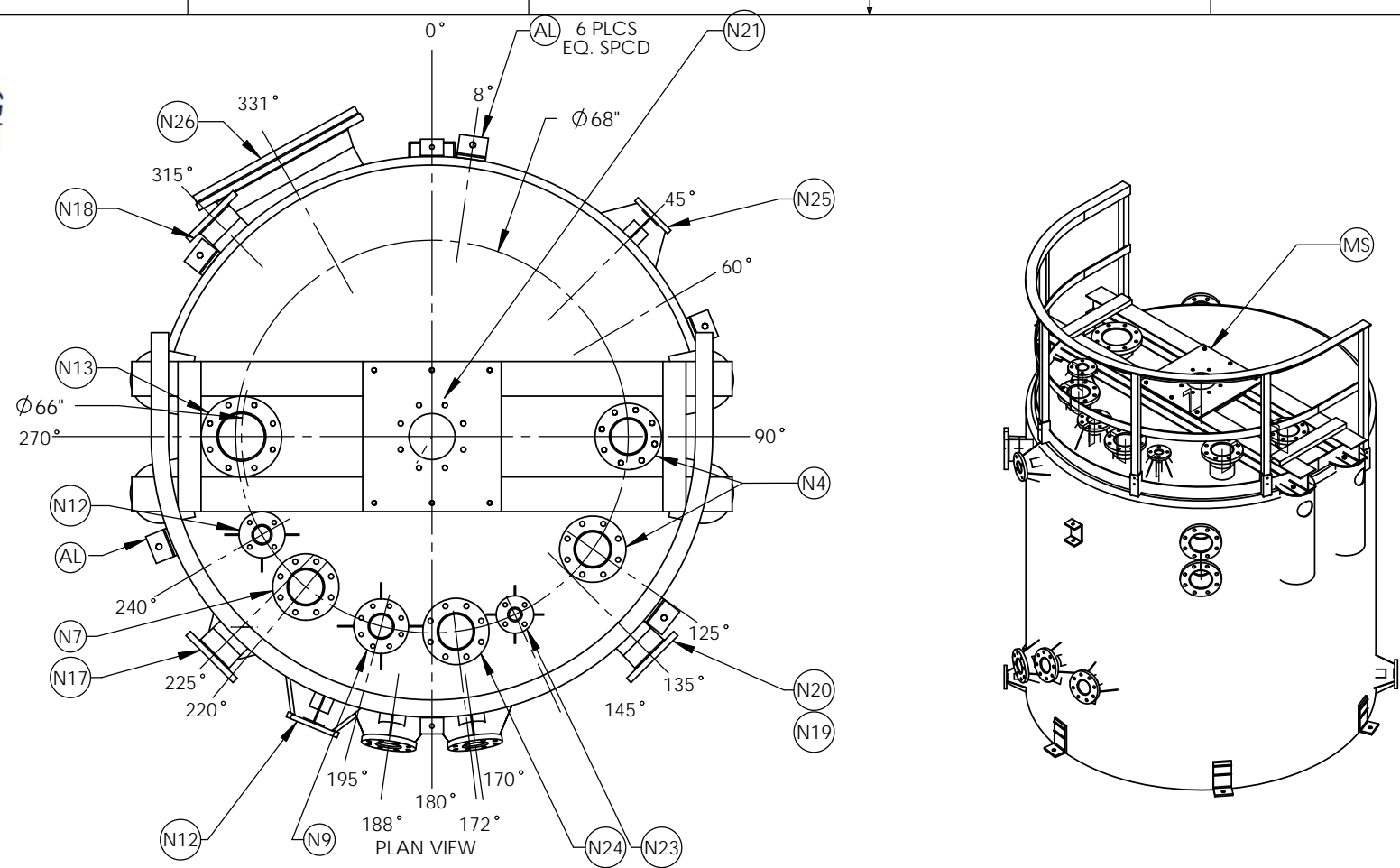
OPERATING PRESSURE: ATMOSPHERIC

MAXIMUM CAPACITY: 3,000 GALLONS

RESIN: HETRON 922

ESTIMATED EMPTY WEIGHT: TBD LBS.

BUILT: JANUARY 2015

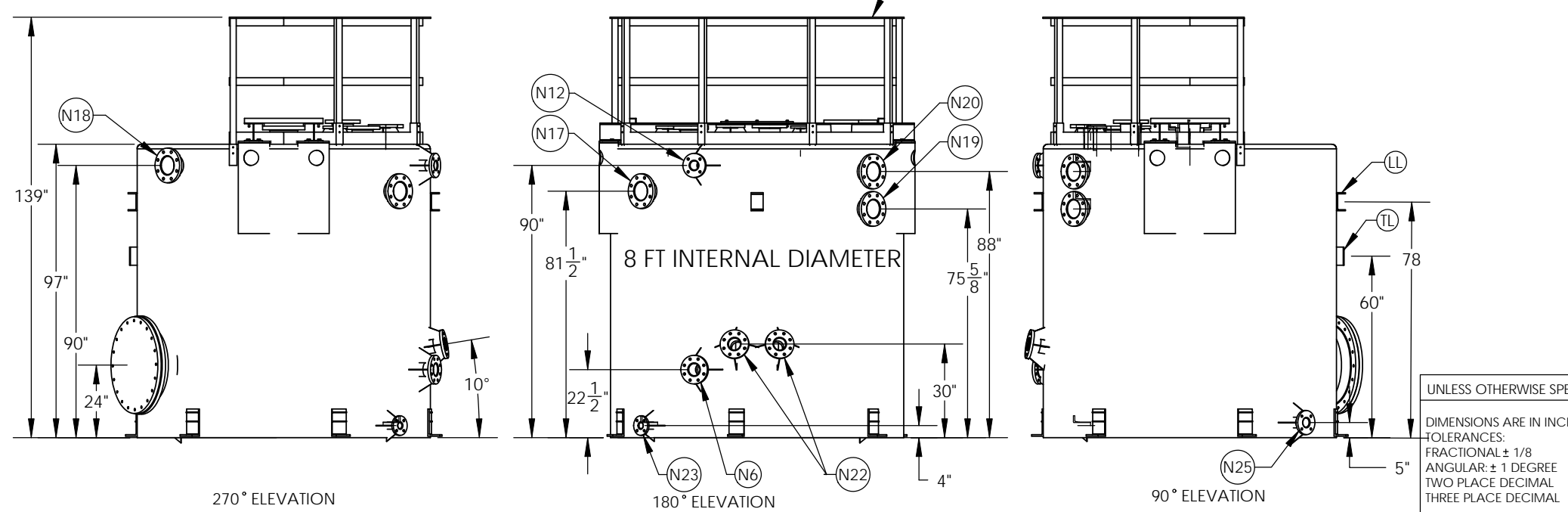


| PARTS LIST |      |       |                               |                    |      |            |     |
|------------|------|-------|-------------------------------|--------------------|------|------------|-----|
| ITEM NO.   | SIZE | MATL  | SERVICE                       | DESCRIPTION        | PROJ | PSI RATING | QTY |
| N1         | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N2         | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N3         | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N4         | 6"   | FRP   | CHEMICAL INJECTION PORT       | FF FLANGE          | 6"   | 150        | 2   |
| N5         | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N6         | 4"   | FRP   | SPARE                         | FF FLANGE          | 6"   | 150        | 1   |
| N7         | 6"   | FRP   | SPARE                         | FF FLANGE          | 6"   | 150        | 1   |
| N8         | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N9         | 4"   | FRP   | VENT                          | FF FLANGE          | 6"   | 150        | 1   |
| N10        | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N11        | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N12        | 3"   | FRP   | SPARE                         | FF FLANGE          | 6"   | 150        | 2   |
| N13        | 8"   | FRP   | VIEWPORT                      | FF FLANGE W/ COVER | 6"   | 150        | 1   |
| N14        | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N15        | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N16        | -    | -     | RESERVED                      | NOT ON TANK        | -    | -          | -   |
| N17        | 6"   | FRP   | GRAVITY FLOW FROM AWN-TNK-200 | FF FLANGE          | 6"   | 150        | 1   |
| N18        | 6"   | FRP   | OVERFLOW FROM AWN-TNK-200     | FF FLANGE          | 6"   | 150        | 1   |
| N19        | 6"   | FRP   | GRAVITY FLOW TO AWN-TNK-400   | FF FLANGE          | 6"   | 150        | 1   |
| N20        | 6"   | FRP   | OVERFLOW TO AWN-TNK-400       | FF FLANGE          | 6"   | 150        | 1   |
| N21        | 8"   | FRP   | PORT (SEE NOTES FOR LOAD CR)  | FF FLANGE          | 6"   | 150        | 1   |
| N22        | 4"   | FRP   | SENSOR PORT                   | FF FLANGE          | 6"   | 150        | 2   |
| N23        | 2"   | FRP   | SENSOR PORT                   | FF FLANGE          | 6"   | 150        | 2   |
| N24        | 6"   | FRP   | SENSOR PORT                   | FF FLANGE          | 6"   | 150        | 1   |
| N25        | 3"   | FRP   | TANK DRAIN                    | FF FLANGE          | 6"   | 150        | 1   |
| N26        | 24"  | FRP   | MANWAY                        | 24" FLANGE W/      | 6"   | 25         | 1   |
| HR         | -    | FRP   | -                             | HANDRAIL ASSY      | -    | -          | 1   |
| MS         | -    | -     | -                             | MIXER SUPPORT      | -    | -          | 1   |
| LL         | -    | 316SS | -                             | LIFTING LUG        | -    | -          | 2   |
| AL         | -    | 316SS | -                             | ANCHOR LUG         | -    | -          | 6   |
| TL         | -    | 304SS | -                             | TANK LABEL         | -    | -          | 1   |

NOTES:  
 1. BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED  
 2. NOZZLES AND COUPLINGS PROTRUDE 2 INCHES WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.  
 3. ALL FLANGED NOZZLES 4" AND SMALLER ARE REINFORCED WITH FOUR 1/4 INCH THICK GUSSET  
 4. SEE PLAN VIEW FOR TRUE ORIENTATION  
 5. ALL LIFTING LUGS, ANCHOR LUGS AND FASTENERS ARE STAINLESS STEEL  
 6. MANWAY GASKET MATERIAL IS EPDM

DESIGN:  
 SERVICE: REACTION WASTEWATER TANK  
 FABRICATION STANDARDS: ASTM D 3299 & ASTM D 4097  
 VISUAL ACCEPTANCE: LEVEL II IAW ASTM D2563  
 FABRICATION METHOD: FILAMENT WOUND AND HAND LAYUP  
 SEISMIC ZONE: D  
 WIND: 115 MPH  
 DESIGN ROOF LOAD: 250LBS  
 DESIGN PRESSURE: ATMOSPHERIC  
 DESIGN VACUUM: ATMOSPHERIC  
 MAX DESIGN TEMPERATURE: 150 F  
 SPECIFIC GRAVITY: 1.1  
 PRESSURE: ATMOSPHERIC  
 MATERIALS OF CONSTRUCTION: HETRON 922 OR EQUAL  
 CURE SYSTEM: MEKP  
 CORROSION BARRIER: 100 MILS NEXUS VEIL  
 COLOR: WHITE GEL COAT W/UV INHIBITOR  
 ESTIMATED EMPTY WEIGHT: 1,000 LBS  
 TANK CAPACITY: 3,000 GALLONS

| REVISIONS |                                                          |           |
|-----------|----------------------------------------------------------|-----------|
| REV       | DESCRIPTION                                              | DATE      |
| X2        | RELEASE FOR APPROVAL                                     | 1/22/2015 |
| X3        | SYNCD NOZZLE SCHEDULE AND NOTES TO WASTECH DRAWING REV 3 | 2/2/2015  |
| X4        | N25 IDENTIFIED IN 90 DEGREE ELEVATION                    | 2/4/2015  |



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
 TOLERANCES:  
 FRACTIONAL: ± 1/8  
 ANGULAR: ± 1 DEGREE  
 TWO PLACE DECIMAL ±0.25  
 THREE PLACE DECIMAL ±0.13

INTERPRET GEOMETRIC TOLERANCING PER:  
 MATERIAL  
 FINISH  
 DO NOT SCALE DRAWING

|           | NAME | DATE     |
|-----------|------|----------|
| DRAWN     | WH   | 12/08/14 |
| CHECKED   |      |          |
| ENG APPR. |      |          |
| MFG APPR. |      |          |
| Q.A.      |      |          |
| COMMENTS: |      |          |

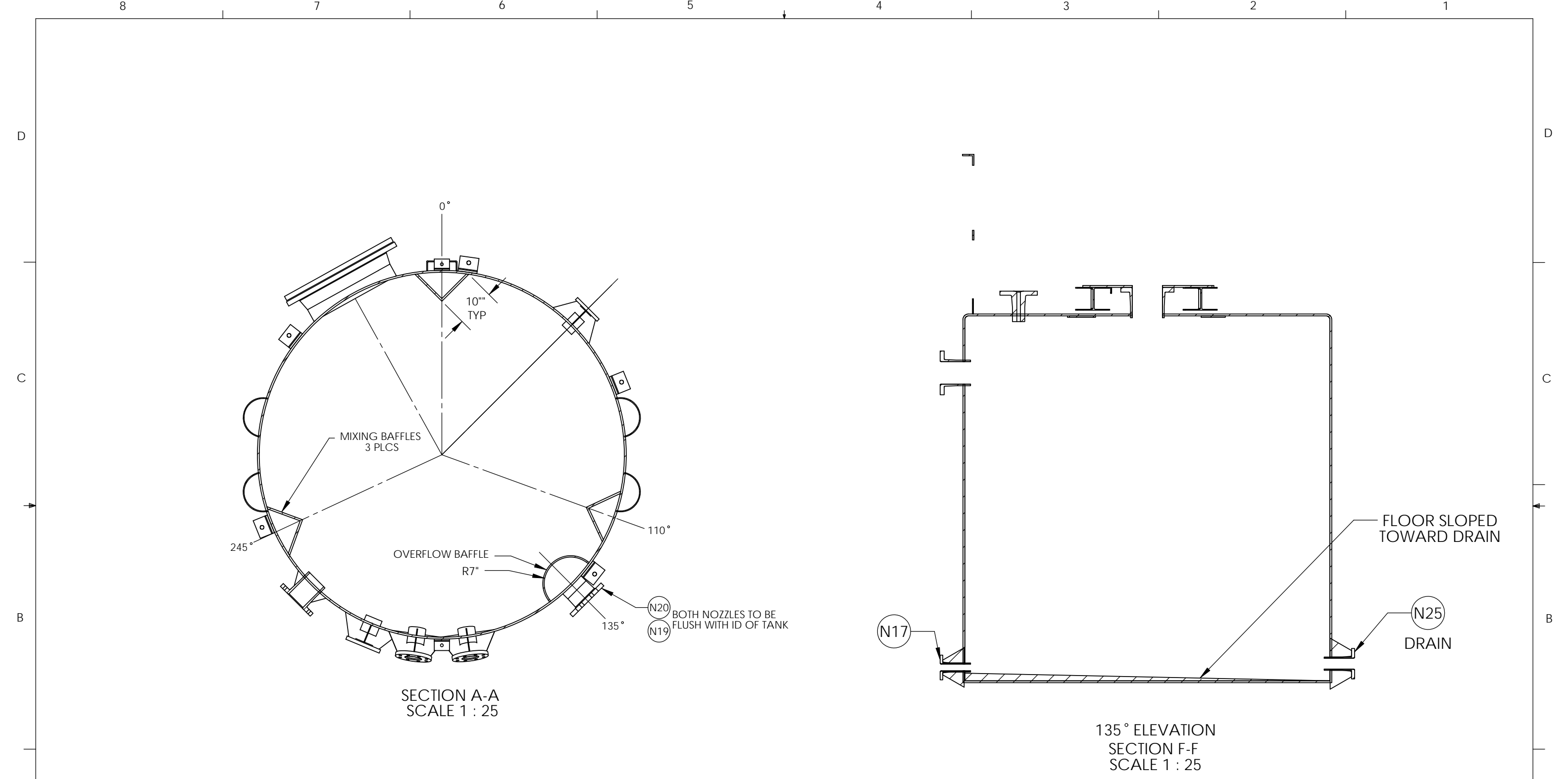


TITLE:  
**WASTECH**  
 21201 ITASCA STREET  
 CHATSWORTH, CA  
 REACTION WASTEWATER TANK

SIZE: **B** DWG. NO.: WT - 14091 - 003 REV: **X4**

SCALE: NTS SHEET 1 OF 4

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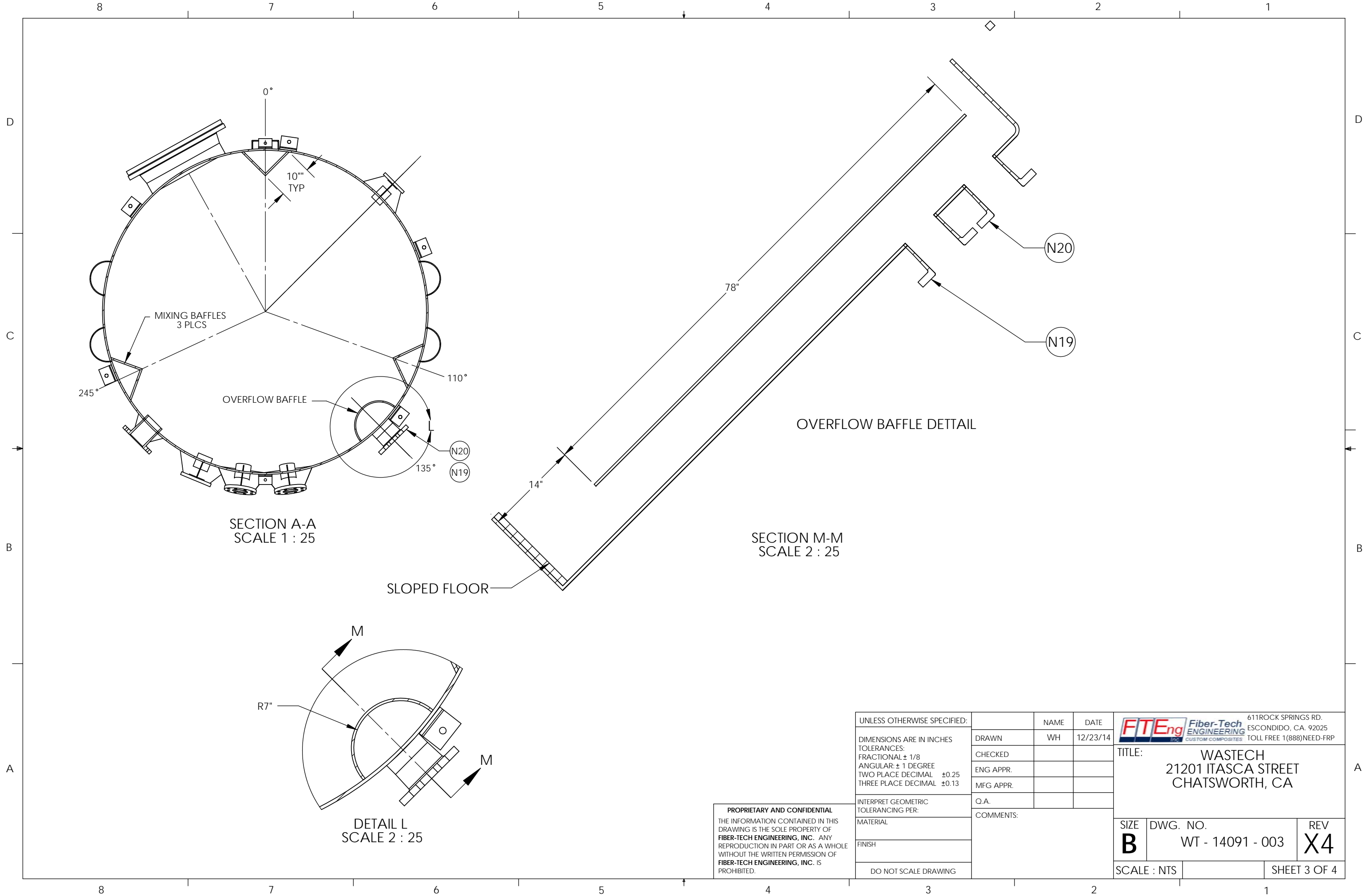
SECTION A-A  
SCALE 1 : 25

135° ELEVATION  
SECTION F-F  
SCALE 1 : 25

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|                                      |           |          |
|--------------------------------------|-----------|----------|
| UNLESS OTHERWISE SPECIFIED:          | NAME      | DATE     |
| DIMENSIONS ARE IN INCHES             | DRAWN     | WH       |
| TOLERANCES:                          | CHECKED   | 12/23/14 |
| FRACTIONAL ± 1/8                     | ENG APPR. |          |
| ANGULAR: ± 1 DEGREE                  | MFG APPR. |          |
| TWO PLACE DECIMAL ±0.25              | Q.A.      |          |
| THREE PLACE DECIMAL ±0.13            | COMMENTS: |          |
| INTERPRET GEOMETRIC TOLERANCING PER: |           |          |
| MATERIAL                             |           |          |
| FINISH                               |           |          |
| DO NOT SCALE DRAWING                 |           |          |

|                                                                                       |                                     |                                                                          |
|---------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------|
|  |                                     | 611 ROCK SPRINGS RD.<br>ESCONDIDO, CA. 92025<br>TOLL FREE 1(888)NEED-FRP |
| <b>TITLE:</b><br>WASTECH<br>21201 ITASCA STREET<br>CHATSWORTH, CA                     |                                     |                                                                          |
| <b>SIZE</b><br><b>B</b>                                                               | <b>DWG. NO.</b><br>WT - 14091 - 003 | <b>REV</b><br><b>X4</b>                                                  |
| <b>SCALE :</b> NTS                                                                    |                                     | <b>SHEET 2 OF 4</b>                                                      |



SECTION A-A  
SCALE 1 : 25

SECTION M-M  
SCALE 2 : 25

DETAIL L  
SCALE 2 : 25

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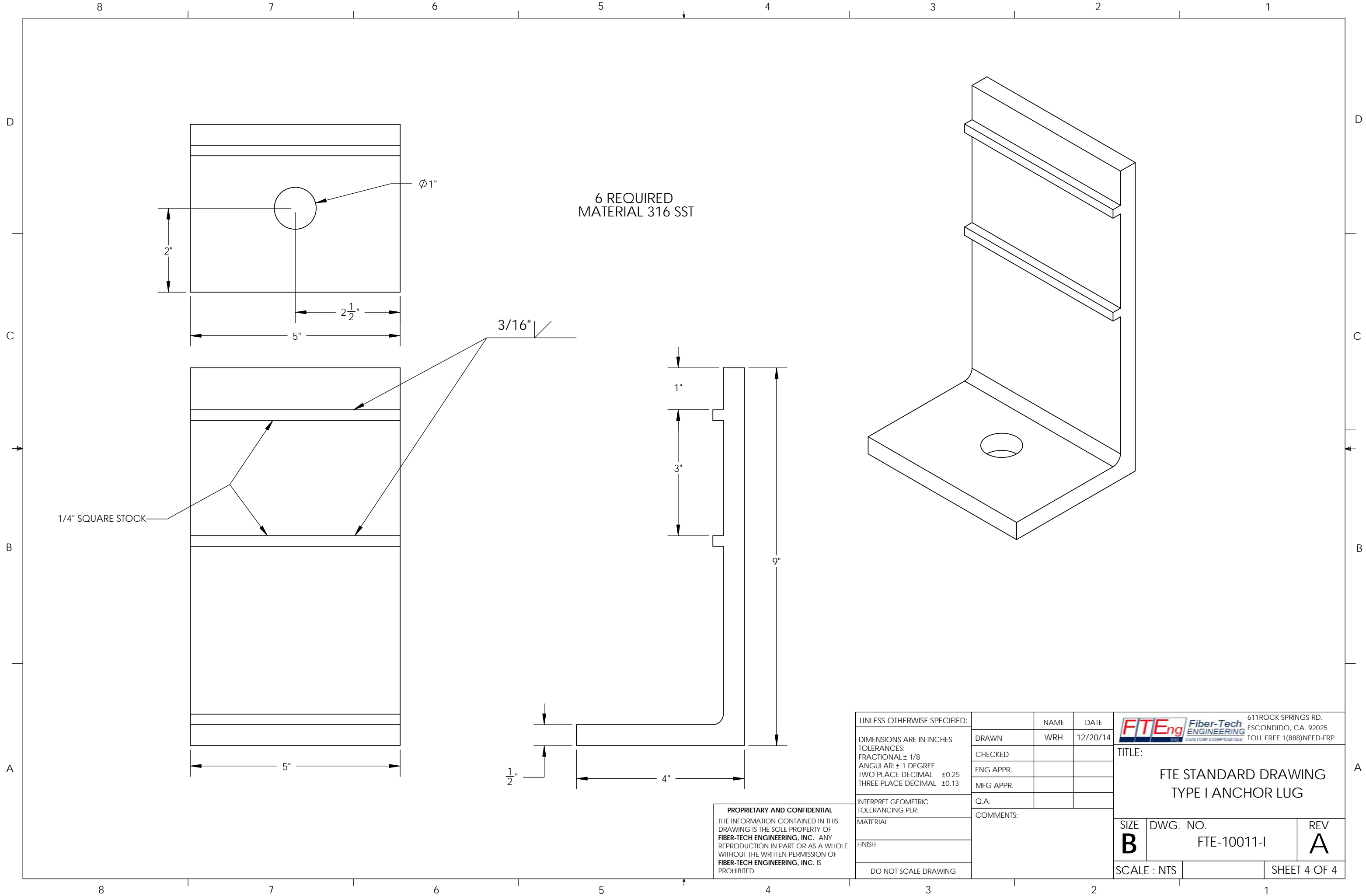
|                                      |  |           |             |
|--------------------------------------|--|-----------|-------------|
| UNLESS OTHERWISE SPECIFIED:          |  | NAME      | DATE        |
| DIMENSIONS ARE IN INCHES             |  | DRAWN     | WH 12/23/14 |
| TOLERANCES:                          |  | CHECKED   |             |
| FRACTIONAL ± 1/8                     |  | ENG APPR. |             |
| ANGULAR: ± 1 DEGREE                  |  | MFG APPR. |             |
| TWO PLACE DECIMAL ±0.25              |  | Q.A.      |             |
| THREE PLACE DECIMAL ±0.13            |  | COMMENTS: |             |
| INTERPRET GEOMETRIC TOLERANCING PER: |  |           |             |
| MATERIAL                             |  |           |             |
| FINISH                               |  |           |             |
| DO NOT SCALE DRAWING                 |  |           |             |

**FTEng** Fiber-Tech ENGINEERING Inc. CUSTOM COMPOSITES  
611 ROCK SPRINGS RD. ESCONDIDO, CA. 92025  
TOLL FREE 1(888)NEED-FRP

TITLE:  
**WASTECH**  
21201 ITASCA STREET  
CHATSWORTH, CA

|                  |                              |                  |
|------------------|------------------------------|------------------|
| SIZE<br><b>B</b> | DWG. NO.<br>WT - 14091 - 003 | REV<br><b>X4</b> |
|------------------|------------------------------|------------------|

SCALE : NTS SHEET 3 OF 4



6 REQUIRED  
MATERIAL 316 SST

1/4" SQUARE STOCK

Ø1"

2"

2 1/2"

5"

3/16"

1"

3"

9"

1/2"

4"

5"

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL ± 1/8  
ANGULAR: ± 1 DEGREE  
TWO PLACE DECIMAL ±0.25  
THREE PLACE DECIMAL ±0.13

INTERPRET GEOMETRIC  
TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

|           | NAME | DATE     |
|-----------|------|----------|
| DRAWN     | WRH  | 12/20/14 |
| CHECKED   |      |          |
| ENG APPR. |      |          |
| MFG APPR. |      |          |
| Q.A.      |      |          |
| COMMENTS: |      |          |

**FTEng** Fiber-Tech  
ENGINEERING Inc. CUSTOM COMPOSITES  
611 ROCK SPRINGS RD.  
ESCONDIDO, CA. 92025  
TOLL FREE 1(888)NEED-FRP

TITLE:  
**FTE STANDARD DRAWING  
TYPE I ANCHOR LUG**

| SIZE     | DWG. NO.    | REV      |
|----------|-------------|----------|
| <b>B</b> | FTE-10011-I | <b>A</b> |

SCALE : NTS SHEET 4 OF 4

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WITHOUT THE WRITTEN PERMISSION OF  
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PROHIBITED.



TOLL FREE 1-888-NEED-FRP

SERIAL #: WT - 14091 - 005

SERVICE: DIVERSION WASTEWATER

TANK NUMBER: AWN-TNK-400

DESIGN TEMPERATURE: 120F

SPECIFIC GRAVITY: 1.1

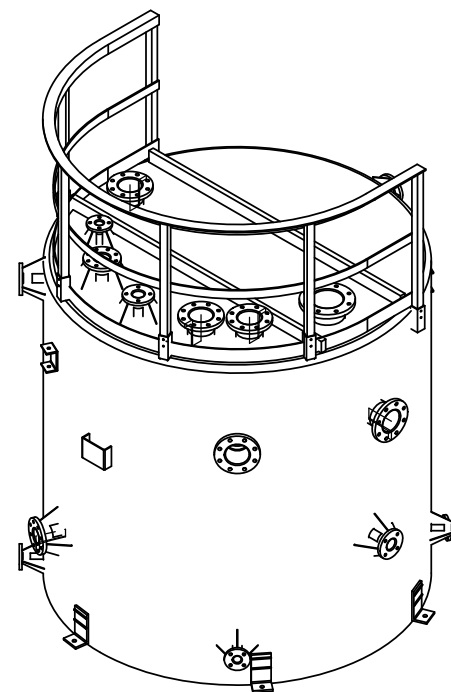
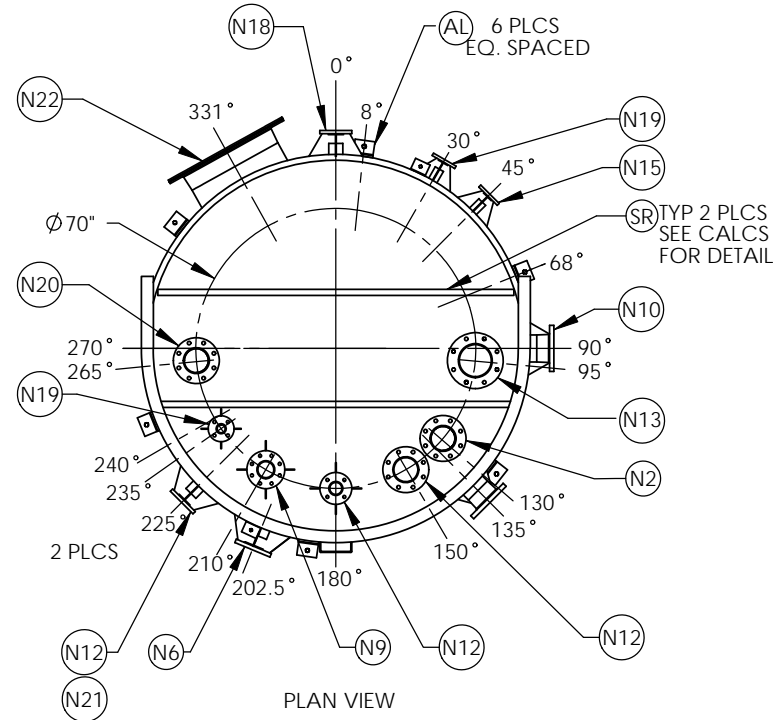
OPERATING PRESSURE: ATMOSPHERIC

MAXIMUM CAPACITY: 2,200 GALLONS

RESIN: HETRON 922

ESTIMATED EMPTY WEIGHT: TBD LBS.

BUILT: JANUARY 2015



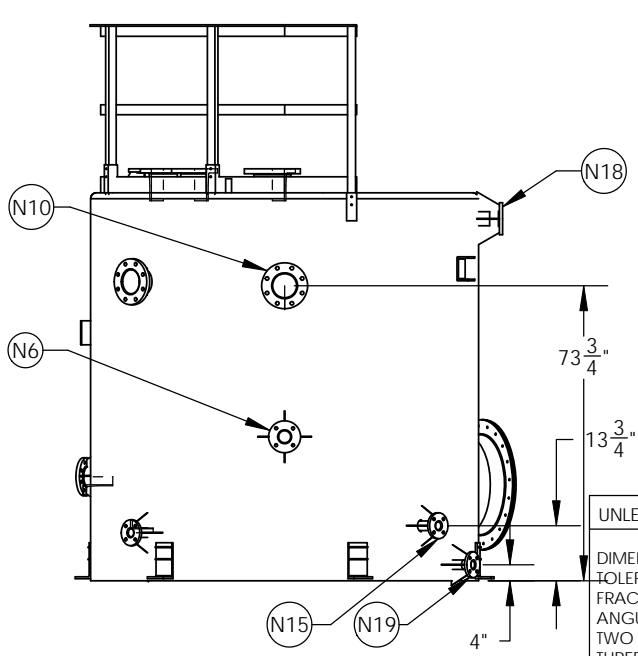
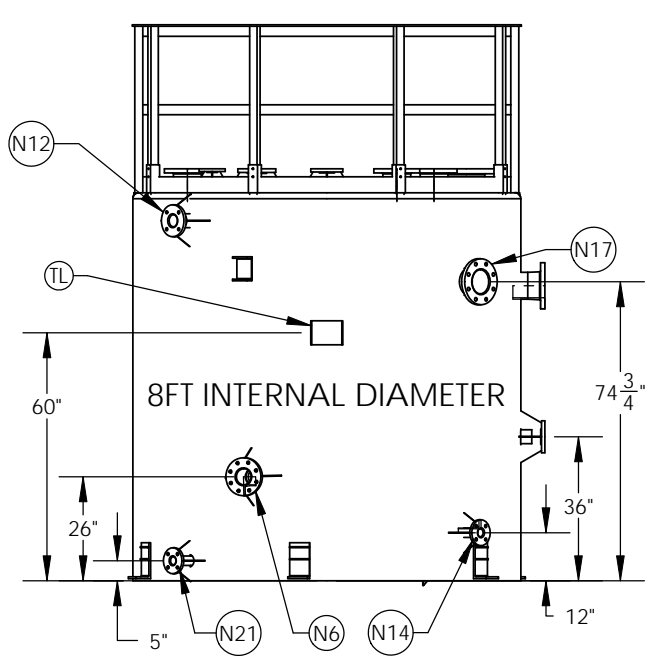
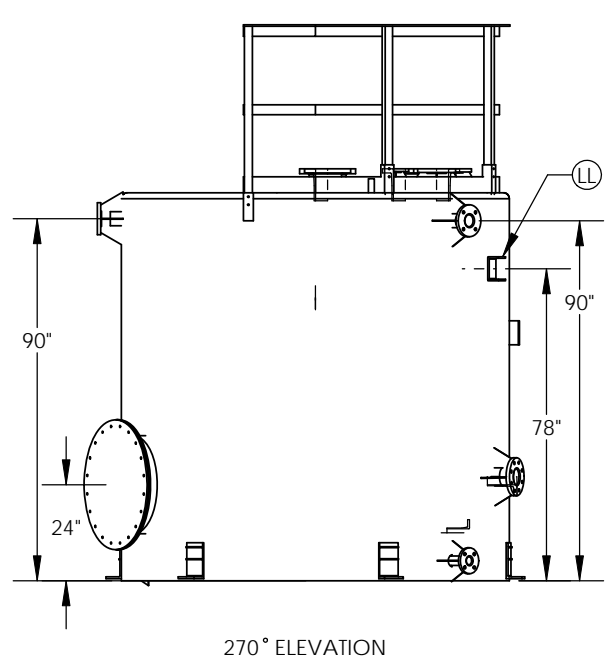
| PARTS LIST |      |       |                             |                 |      |            |     |
|------------|------|-------|-----------------------------|-----------------|------|------------|-----|
| ITEM NO.   | SIZE | MATL  | SERVICE                     | DESCRIPTION     | PROJ | PSI RATING | QTY |
| N1         | -    | -     | RESERVED                    | NOT ON TANK     | -    | -          | -   |
| N2         | 6"   | FRP   | INLET FROM AWN-TNK-010      | FF FLANGE       | 6"   | 150        | 1   |
| N3         | -    | -     | RESERVED                    | NOT ON TANK     | -    | -          | -   |
| N4         | -    | -     | RESERVED                    | NOT ON TANK     | -    | -          | -   |
| N5         | -    | -     | RESERVED                    | NOT ON TANK     | -    | -          | -   |
| N6         | 4"   | FRP   | SPARE                       | FF FLANGE       | 6"   | 150        | 2   |
| N7         | 6"   | FRP   | SPARE                       | FF FLANGE       | 6"   | 150        | 1   |
| N8         | -    | -     | RESERVED                    | NOT ON TANK     | -    | -          | -   |
| N9         | 4"   | FRP   | VENT                        | FF FLANGE       | 6"   | 150        | 1   |
| N10        | 6"   | FRP   | OVERFLOW                    | FF FLANGE       | 6"   | 150        | 1   |
| N11        | -    | -     | RESERVED                    | NOT ON TANK     | -    | -          | -   |
| N12        | 3"   | FRP   | SPARE                       | FF FLANGE       | 6"   | 150        | 2   |
| N13        | 8"   | FRP   | VIEWPORT                    | FLANGE W/ COVER | 6"   | 150        | 1   |
| N14        | 2"   | FRP   | SAMPLING PORT               | FF FLANGE       | 6"   | 150        | 1   |
| N15        | 3"   | FRP   | SUCTION TO DIVERSION PUMP   | FF FLANGE       | 6"   | 150        | 1   |
| N16        | -    | -     | RESERVED                    | NOT ON TANK     | -    | -          | -   |
| N17        | 6"   | FRP   | RAVITY FLOW FROM AWN-TNK-3  | FF FLANGE       | 6"   | 150        | 1   |
| N18        | 3"   | FRP   | F INLET FROM DIVERSION PUMP | FF FLANGE       | 6"   | 150        | 1   |
| N19        | 2"   | FRP   | SENSOR PORT                 | FF FLANGE       | 6"   | 150        | 2   |
| N20        | 6"   | FRP   | SENSOR PORT                 | FF FLANGE       | 6"   | 150        | 1   |
| N21        | 3"   | FRP   | TANK DRAIN                  | FF FLANGE       | 6"   | 150        | 1   |
| N22        | 24"  | FRP   | MANWAY                      | FLANGE W/ COVER | 6"   | 25         | 1   |
| HR         | -    | FRP   | -                           | HANDRAIL ASSY   | -    | -          | 1   |
| SR         | -    | WOOD  | -                           | STIFFENING RIB  | -    | -          | 2   |
| LL         | -    | 316SS | -                           | LIFTING LUG     | -    | -          | 2   |
| AL         | -    | 316SS | -                           | ANCHOR LUG      | -    | -          | 6   |
| TL         | -    | 304SS | -                           | TANK LABEL      | -    | -          | 1   |

- NOTES:
- BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED
  - NOZZLES AND COUPLINGS PROTRUDE 2 INCHES WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.
  - ALL FLANGED NOZZLES 4" AND SMALLER ARE REINFORCED WITH FOUR 1/4 INCH THICK GUSSE
  - SEE PLAN VIEW FOR TRUE ORIENTATION
  - ALL LIFTING LUGS, ANCHOR LUGS AND FASTENERS ARE STAINLESS STEEL
  - MANWAY GASKET MATERIAL IS EPDM

DESIGN:

|                            |                               |
|----------------------------|-------------------------------|
| SERVICE:                   | DIVERSION TANK                |
| FABRICATION STANDARDS:     | ASTM D 3299 & ASTM D 4097     |
| VISUAL ACCEPTANCE:         | LEVEL II IAW ASTM D2563       |
| FABRICATION METHOD:        | FILAMENT WOUND AND HAND LAYUP |
| SEISMIC ZONE:              | D                             |
| WIND:                      | 115 MPH                       |
| DESIGN ROOF LOAD:          | 250LBS                        |
| DESIGN PRESSURE:           | ATMOSPHERIC                   |
| DESIGN VACUUM:             | ATMOSPHERIC                   |
| MAX DESIGN TEMPERATURE:    | 150 F                         |
| SPECIFIC GRAVITY:          | 1.1                           |
| PRESSURE:                  | ATMOSPHERIC                   |
| MATERIALS OF CONSTRUCTION: | HETRON 922 OR EQUAL           |
| CURE SYSTEM:               | MEKP                          |
| CORROSION BARRIER:         | 100 MILS NEXUS VEIL           |
| COLOR:                     | WHITE GEL COAT W/UV INHIBITOR |
| ESTIMATED EMPTY WEIGHT:    | 1,000 LBS                     |
| TANK CAPACITY:             | 3,000 GALLONS                 |

| REVISIONS |                                                           |           |
|-----------|-----------------------------------------------------------|-----------|
| REV       | DESCRIPTION                                               | DATE      |
| X2        | RELEASE FOR APPROVAL                                      | 1/22/2015 |
| X3        | SYNCED NOZZLE SCHEDULE AND NOTES TO WASTECH DRAWING REV 3 | 2/2/2015  |
| X4        | NOZZLE AND DIMENSION CLARIFICATION PER WASTECH MARKUP     | 2/4/2015  |



UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN INCHES  
 TOLERANCES:  
 FRACTIONAL: ± 1/8  
 ANGULAR: ± 1 DEGREE  
 TWO PLACE DECIMAL ±0.25  
 THREE PLACE DECIMAL ±0.13

|           | NAME | DATE     |
|-----------|------|----------|
| DRAWN     | WH   | 12/19/14 |
| CHECKED   |      |          |
| ENG APPR. |      |          |
| MFG APPR. |      |          |
| Q.A.      |      |          |
| COMMENTS: |      |          |

611 ROCK SPRINGS RD.  
 ESCONDIDO, CA. 92025  
 TOLL FREE 1(888)NEED-FRP

**FTEng** Fiber-Tech ENGINEERING Inc. CUSTOM COMPOSITES

TITLE:  
**WASTECH**  
 21201 ITASCA STREET  
 CHATSWORTH, CA

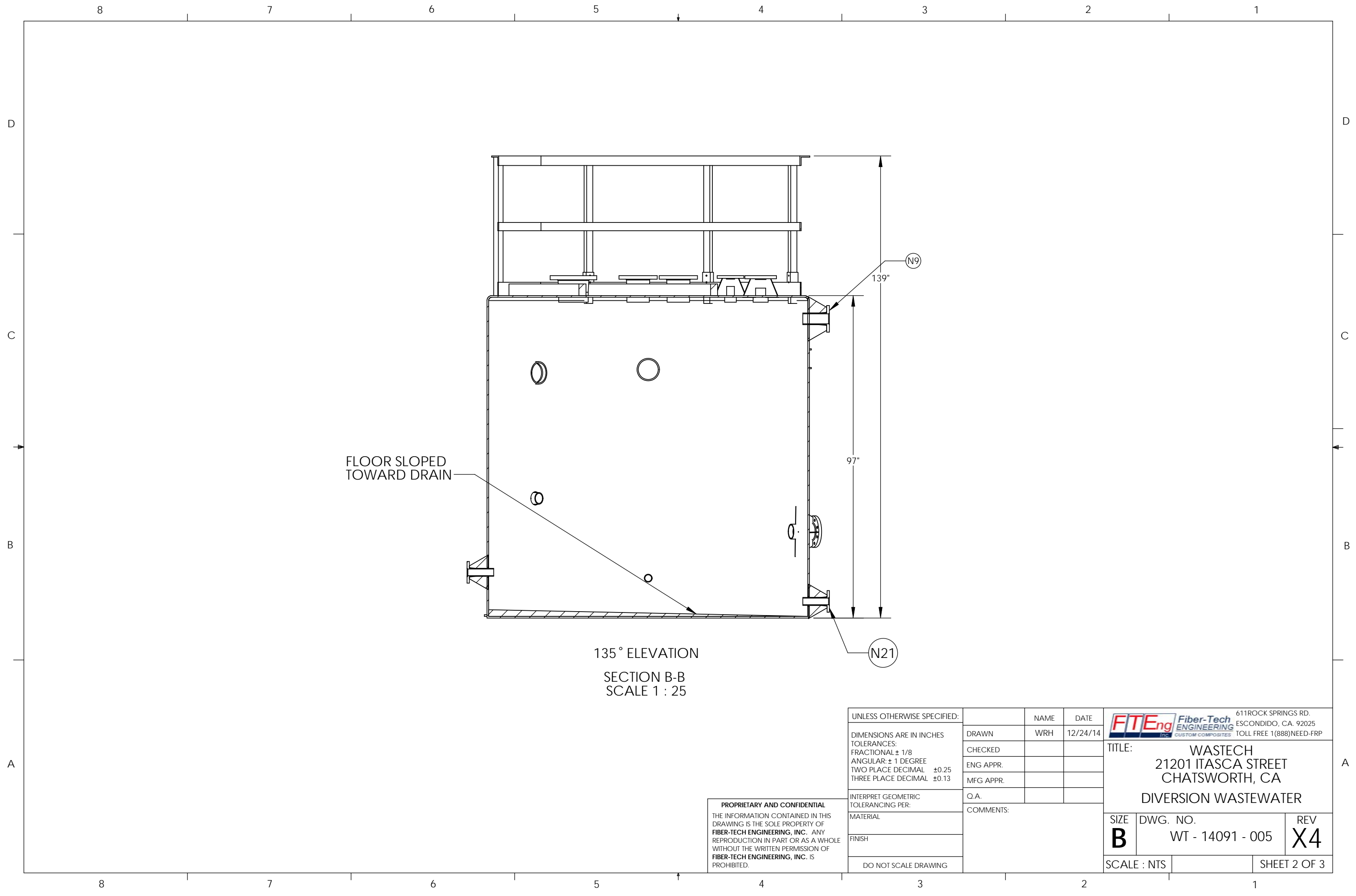
DIVERSION WASTEWATER

SIZE **B** DWG. NO. WT - 14091 - 005 REV **X4**

SCALE : NTS SHEET 1 OF 3

PROPRIETARY AND CONFIDENTIAL  
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DO NOT SCALE DRAWING



FLOOR SLOPED TOWARD DRAIN

135° ELEVATION  
SECTION B-B  
SCALE 1 : 25

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|                                      |           |      |          |
|--------------------------------------|-----------|------|----------|
| UNLESS OTHERWISE SPECIFIED:          |           | NAME | DATE     |
| DIMENSIONS ARE IN INCHES             | DRAWN     | WRH  | 12/24/14 |
| TOLERANCES:                          | CHECKED   |      |          |
| FRACTIONAL ± 1/8                     | ENG APPR. |      |          |
| ANGULAR: ± 1 DEGREE                  | MFG APPR. |      |          |
| TWO PLACE DECIMAL ±0.25              | Q.A.      |      |          |
| THREE PLACE DECIMAL ±0.13            | COMMENTS: |      |          |
| INTERPRET GEOMETRIC TOLERANCING PER: |           |      |          |
| MATERIAL                             |           |      |          |
| FINISH                               |           |      |          |
| DO NOT SCALE DRAWING                 |           |      |          |

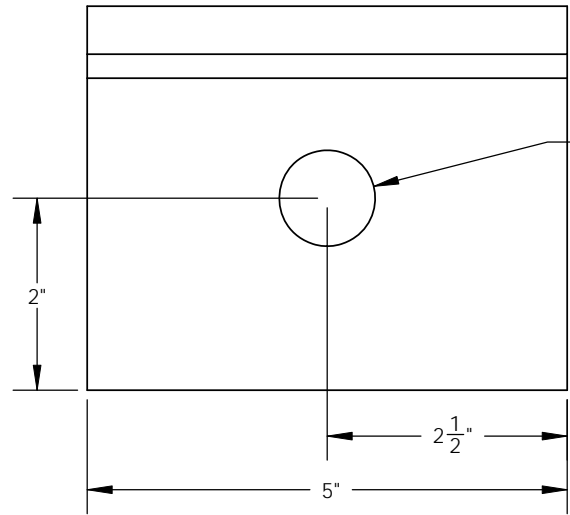
|                                                                                           |                                     |                                                                          |  |
|-------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------|--|
|      |                                     | 611 ROCK SPRINGS RD.<br>ESCONDIDO, CA. 92025<br>TOLL FREE 1(888)NEED-FRP |  |
| <b>TITLE:</b><br>WASTECH<br>21201 ITASCA STREET<br>CHATSWORTH, CA<br>DIVERSION WASTEWATER |                                     |                                                                          |  |
| <b>SIZE</b><br><b>B</b>                                                                   | <b>DWG. NO.</b><br>WT - 14091 - 005 | <b>REV</b><br><b>X4</b>                                                  |  |
| <b>SCALE :</b> NTS                                                                        |                                     | <b>SHEET 2 OF 3</b>                                                      |  |



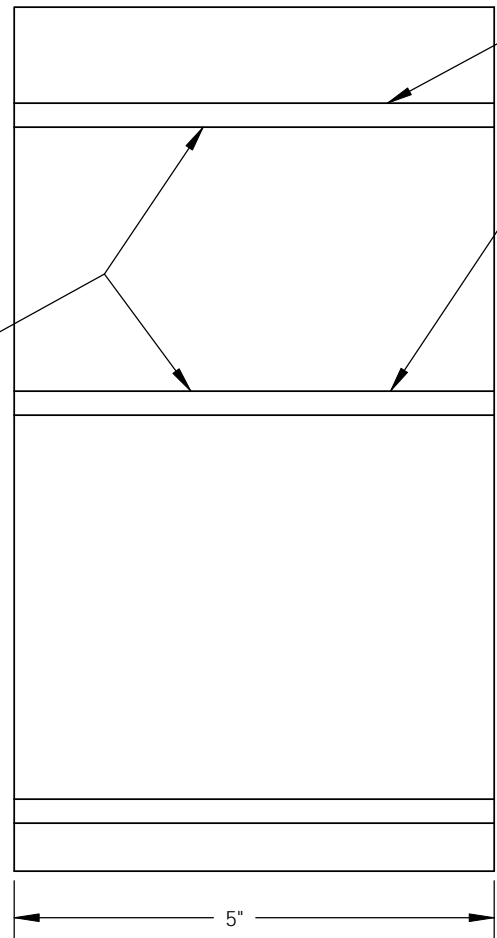
8 7 6 5 4 3 2 1

D  
C  
B  
A

D  
C  
B  
A

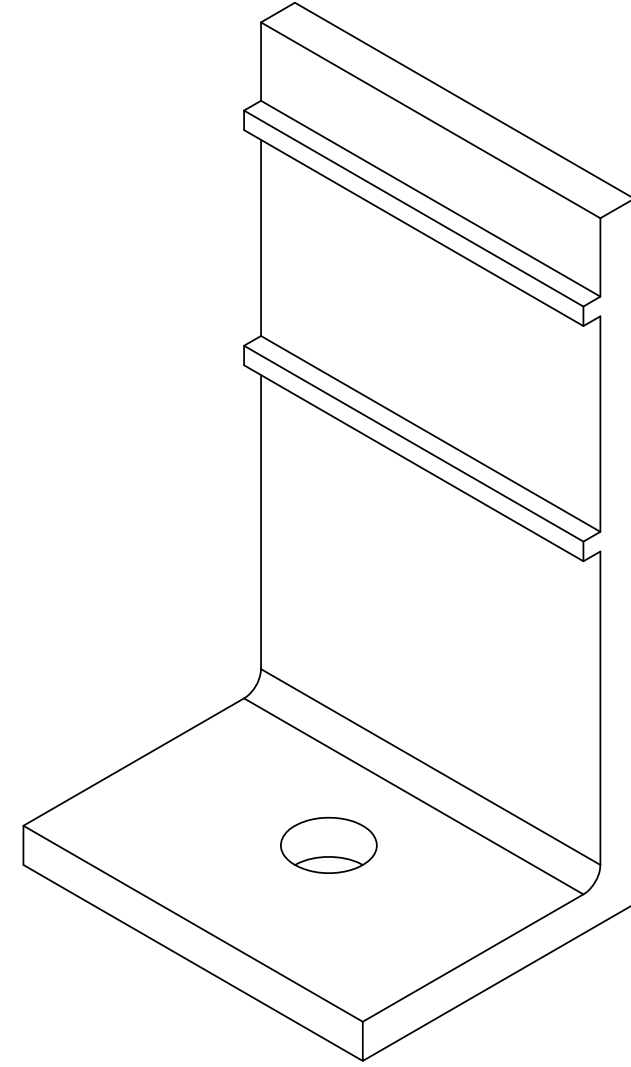
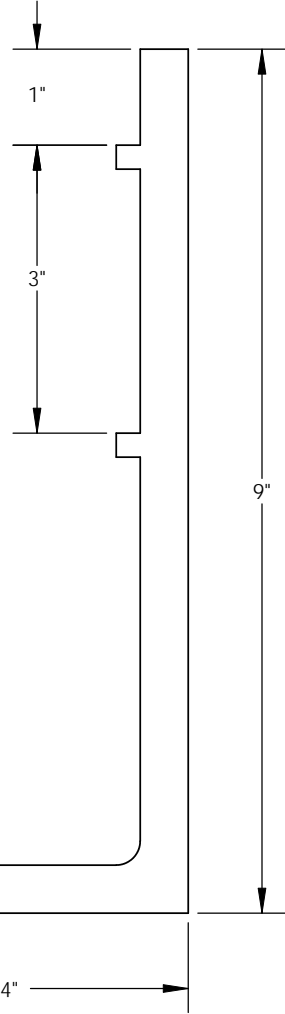


6 REQUIRED MATERIAL 316 SST



1/4" SQUARE STOCK

3/16"



|                                      |  |           |              |
|--------------------------------------|--|-----------|--------------|
| UNLESS OTHERWISE SPECIFIED:          |  | NAME      | DATE         |
| DIMENSIONS ARE IN INCHES             |  | DRAWN     | WRH 12/20/14 |
| TOLERANCES:                          |  | CHECKED   |              |
| FRACTIONAL ± 1/8                     |  | ENG APPR. |              |
| ANGULAR: ± 1 DEGREE                  |  | MFG APPR. |              |
| TWO PLACE DECIMAL ±0.25              |  | Q.A.      |              |
| THREE PLACE DECIMAL ±0.13            |  | COMMENTS: |              |
| INTERPRET GEOMETRIC TOLERANCING PER: |  |           |              |
| MATERIAL                             |  |           |              |
| FINISH                               |  |           |              |
| DO NOT SCALE DRAWING                 |  |           |              |

**FTE** *Fiber-Tech* ENGINEERING  
INC. CUSTOM COMPOSITES  
 611 ROCK SPRINGS RD.  
 ESCONDIDO, CA. 92025  
 TOLL FREE 1(888)NEED-FRP

TITLE:  
**FTE STANDARD DRAWING  
 TYPE I ANCHOR LUG**

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|                  |                         |                 |
|------------------|-------------------------|-----------------|
| SIZE<br><b>B</b> | DWG. NO.<br>FTE-10011-I | REV<br><b>A</b> |
| SCALE : NTS      |                         | SHEET 3 OF 3    |

8 7 6 5 4 3 2 1

ATTACHMENT 3  
LEAK TEST RECORDS



# PRESSURE TEST FORM

|                                               |                        |
|-----------------------------------------------|------------------------|
| Project: <u>ARIAS</u>                         | Test No.: <u>42</u>    |
| System: <u>A.W. DRAIN TO TANK 400 PRIMARY</u> | Job #: <u>330382-1</u> |
| Date: <u>8/29/15</u>                          |                        |

### Brief Description of Test and Boundaries

REF. 43

|                              |                                                                                      |
|------------------------------|--------------------------------------------------------------------------------------|
| Drawing / Spool #:           | <u>A.W. DRAIN 6x10 PRIMARY (Waste Water) FROM Equalization TANK TO A.W. TANK 400</u> |
| Specification Title Section: | <u>A.W. DRAIN TO TANK 400</u>                                                        |
| Allowable Pressure Change:   | <u>0</u> PSIG <u>5 PSI</u>                                                           |
| Test Medium:                 | <u>AIR</u>                                                                           |
| Point of Connection:         | <u>A.W. DRAIN FROM Equalization HEADER ME93.</u>                                     |
| Point of Termination:        | <u>TO A.W. TANK 400</u>                                                              |

### Test Results

| Date           | Time           |                            |               | Pressure       |                | Passed<br>(Yes / No)                         | Comments           |
|----------------|----------------|----------------------------|---------------|----------------|----------------|----------------------------------------------|--------------------|
|                | Start          | End                        | Duration      | Start          | End            |                                              |                    |
| <u>8-28-15</u> | <u>7:00 AM</u> | <u>8-29-15<br/>7:00 AM</u> | <u>24 hrs</u> | <u>5.2 PSI</u> |                | Yes / No                                     |                    |
| <u>8/29/15</u> | <u>08:00am</u> | <u>08:58am</u>             | <u>1 HR</u>   | <u>5.2 PSI</u> | <u>5.2 PSI</u> | <input checked="" type="checkbox"/> Yes / No | <u>Pass and PR</u> |
|                |                |                            |               |                |                | Yes / No                                     |                    |
|                |                |                            |               |                |                | Yes / No                                     |                    |
|                |                |                            |               |                |                | Yes / No                                     |                    |

COMMENTS: \_\_\_\_\_

Completed By: Monte Morehead Date: 8-29-15  
 Witnessed By: [Signature] Date: 8-29-15



# PRESSURE TEST FORM

|                                                             |                      |
|-------------------------------------------------------------|----------------------|
| Project: <b>ADIA'S</b>                                      | Test No.: <b>33</b>  |
| System: <b>ACID WASTE DIVERSION</b> Job #: <b>330 382-I</b> | Date: <b>8/25/15</b> |

**II PRIMARY**

Brief Description of Test and Boundaries

**CONTINUED TEST # 34**

|                              |                                                          |
|------------------------------|----------------------------------------------------------|
| Drawing / Spool #:           | <b>ACID WASTE DIVERSION II</b>                           |
| Specification Title Section: | <b>ACID WASTE DIVERSION II <sup>PRIMARY</sup> piping</b> |
| Allowable Pressure Change:   | <b>0</b> PSIG <b>5 PSI</b>                               |
| Test Medium:                 | <b>AIR</b>                                               |
| Point of Connection:         | <b>ACID WASTE PUMPING SKID</b>                           |
| Point of Termination:        | <b>ACID TANK 400</b>                                     |

### Test Results

| Date           | Time         |              |               | Pressure   |            | Passed (Yes / No) | Comments               |
|----------------|--------------|--------------|---------------|------------|------------|-------------------|------------------------|
|                | Start        | End          | Duration      | Start      | End        |                   |                        |
| <b>8/25/15</b> | <b>0710</b>  |              |               |            |            | Yes / No          |                        |
| <b>8/26/15</b> | <b>0805</b>  | <b>11:12</b> | <b>7:14A</b>  | <b>5.2</b> | <b>5.0</b> | <b>Yes / No</b>   | <b>REWORK 30 MARKS</b> |
|                | <b>11:12</b> | <b>11:45</b> | <b>7:30AM</b> | <b>5.2</b> | <b>5.0</b> | Yes / No          | <b>RASB PA</b>         |
|                |              |              |               |            |            | Yes / No          |                        |
|                |              |              |               |            |            | Yes / No          |                        |

COMMENTS: \_\_\_\_\_

Completed By: Monte Morehead

Date: 8-26-15

Witnessed By: D. J. John

Date: 8/26/15



# PRESSURE TEST FORM

|                                      |                                             |
|--------------------------------------|---------------------------------------------|
| Project: <u>ADIA'S</u>               | Test No.: <u>37</u>                         |
| System: <u>6" ACID WASTE PRIMARY</u> | Job #: <u>330830-I</u> Date: <u>8/25/15</u> |

### Brief Description of Test and Boundaries

*CONTINUED #38*

|                              |                                                |
|------------------------------|------------------------------------------------|
| Drawing / Spool #:           | <u>ACID WASTE DRAIN 6x10" PRIMARY 6"</u>       |
| Specification Title Section: | <u>ACID WASTE DRAIN FROM Equalization TANK</u> |
| Allowable Pressure Change:   | PSIG<br><u>φ</u> <u>5 PSI</u>                  |
| Test Medium:                 | <u>AIR</u>                                     |
| Point of Connection:         | <u>A.W. FROM Equalization TANK (PRIMARY)</u>   |
| Point of Termination:        | <u>M.W. TANK #100</u>                          |

### Test Results

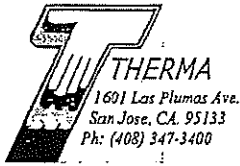
| Date           | Time         |              |              | Pressure          |                   | Passed                                       | Comments                                      |
|----------------|--------------|--------------|--------------|-------------------|-------------------|----------------------------------------------|-----------------------------------------------|
|                | Start        | End          | Duration     | Start             | End               | (Yes / No)                                   |                                               |
| <u>8/25/15</u> | <u>7:10</u>  |              |              |                   |                   | Yes / No                                     |                                               |
| <u>8/26/15</u> | <u>08:25</u> | <u>11:26</u> | <u>2:14R</u> | <u>&lt;5.7PSI</u> | <u>&lt;5.6PSI</u> | <input checked="" type="checkbox"/> Yes / No | <u>PIPING SURVEYED &amp; PASSED AT FINAL.</u> |
|                |              |              |              |                   |                   | Yes / No                                     |                                               |
|                |              |              |              |                   |                   | Yes / No                                     |                                               |
|                |              |              |              |                   |                   | Yes / No                                     |                                               |

COMMENTS: \_\_\_\_\_

Completed By: *[Signature]*  
 Witnessed By: *[Signature]*

Date: 8/26/15  
 Date: 8/26/15





# PRESSURE TEST FORM

|                                                             |                                            |
|-------------------------------------------------------------|--------------------------------------------|
| Project: <u>ARIS</u>                                        | Test No.: <u>40</u>                        |
| System: <u>A.W. Equalization Header</u><br><u>secondary</u> | Job #: <u>330382-I</u> Date: <u>9/1/15</u> |

Brief Description of Test and Boundaries

CONTINUED # 29

|                              |                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------|
| Drawing / Spool #:           | <u>A.W. secondary line coming from Equalization Header to lift station trench</u> |
| Specification Title Section: | <u>A.W. secondary header <sup>pump</sup> drain line</u>                           |
| Allowable Pressure Change:   | $\phi$ PSIG <u>5 PSI</u>                                                          |
| Test Medium:                 | <u>AIR</u>                                                                        |
| Point of Connection:         | <u>A.W. Equalization Header</u>                                                   |
| Point of Termination:        | <u>off A.W. lift station (trench)</u>                                             |

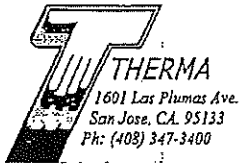
Test Results

| Date          | Time           |                              |               | Pressure        |                 | Passed          | Comments                                                                |
|---------------|----------------|------------------------------|---------------|-----------------|-----------------|-----------------|-------------------------------------------------------------------------|
|               | Start          | End                          | Duration      | Start           | End             | (Yes / No)      |                                                                         |
| <u>9-1-15</u> | <u>7:00</u>    | <u>7:00</u><br><u>9-2-15</u> | <u>24 hrs</u> | <u>5.4</u>      | <u>5.4</u>      | <u>Yes / No</u> |                                                                         |
| <u>9/2/15</u> | <u>7:30 AM</u> | <u>7:45 PM</u>               | <u>7 HR</u>   | <u>5.4 PSIG</u> | <u>6.2 PSIG</u> | <u>Yes / No</u> | <u>PIPE IN GOOD CONDITION. PRESS TEST BY SYSTEM. TO BE DONE IN DEPT</u> |
|               |                |                              |               |                 |                 | <u>Yes / No</u> |                                                                         |
|               |                |                              |               |                 |                 | <u>Yes / No</u> |                                                                         |
|               |                |                              |               |                 |                 | <u>Yes / No</u> |                                                                         |

COMMENTS: \_\_\_\_\_

Completed By: Monte Morehead  
 Witnessed By: [Signature]

Date: 9-2-15  
 Date: 9/2/15



# PRESSURE TEST FORM

|                                                  |                     |
|--------------------------------------------------|---------------------|
| Project: <b>ARDA'S</b>                           | Test No.: <b>34</b> |
| System: <b>ACID WASTE DIVERSION II SECONDARY</b> | Date: <b>9/1/15</b> |
| Job #: <b>330382-I</b>                           |                     |

## Brief Description of Test and Boundaries

continued # 33  
TEST

|                              |                                                 |
|------------------------------|-------------------------------------------------|
| Drawing / Spool #:           | <b>ACID WASTE DIVERSION II SECONDARY PIPING</b> |
| Specification Title Section: | <b>ACID WASTE DIVERSION II SECONDARY PIPING</b> |
| Allowable Pressure Change:   | <b>PSIG 5 PSI</b>                               |
| Test Medium:                 | <b>AIR</b>                                      |
| Point of Connection:         | <b>ACID WASTE PUMPING SKID</b>                  |
| Point of Termination:        | <b>ACID TANK WOOD</b>                           |

## Test Results

| Date   | Time    |                   |          | Pressure |         | Passed (Yes / No) | Comments                                |
|--------|---------|-------------------|----------|----------|---------|-------------------|-----------------------------------------|
|        | Start   | End               | Duration | Start    | End     |                   |                                         |
| 9-1-15 | 7:00 AM | 7:00 AM<br>9-2-15 | 24 hrs   | 5.0      | 5.0     | Yes / No          |                                         |
| 9-2-15 | 7:59 AM | 156 AM            | 76 hrs   | 4.9 PSI  | 5.0 PSI | Yes / No          | physical<br>ALSO CHECKED 70 170 208 420 |
|        |         |                   |          |          |         | Yes / No          |                                         |
|        |         |                   |          |          |         | Yes / No          |                                         |
|        |         |                   |          |          |         | Yes / No          |                                         |

COMMENTS: \_\_\_\_\_

Completed By: Monte Morales  
 Witnessed By: [Signature]

Date: 9-2-15  
 Date: 9/1/15





# PRESSURE TEST FORM

|                                         |                        |
|-----------------------------------------|------------------------|
| Project: <b>ARIAS</b>                   | Test No.: <b>41</b>    |
| System: <b>A.W. DIVERSION SECONDARY</b> | Job #: <b>B30302-I</b> |
|                                         | Date: <b>9/1/15</b>    |

Brief Description of Test and Boundaries

*continued # 27*

|                              |                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------|
| Drawing / Spool #:           | <b>A.W. DIVERSION secondary line coming from equalization tank to A.W. DIVERSION SKID TANK #400 SKID</b> |
| Specification Title Section: | <b>ACID WASTE secondary FROM <sup>DIVERSION</sup> PUMP SKID</b>                                          |
| Allowable Pressure Change:   | <b>0 PSIG 5 PSI</b>                                                                                      |
| Test Medium:                 | <b>AIR</b>                                                                                               |
| Point of Connection:         | <b>DIVERSIONARY TANK SKID</b>                                                                            |
| Point of Termination:        | <b>Equalization Header on MENZ</b>                                                                       |

Test Results

| Date   | Time    |                   |          | Pressure |         | Passed                                       | Comments                                  |
|--------|---------|-------------------|----------|----------|---------|----------------------------------------------|-------------------------------------------|
|        | Start   | End               | Duration | Start    | End     | (Yes / No)                                   |                                           |
| 9-1-15 | 7:00 AM | 7:00 AM<br>9-2-15 | 24 hrs   | 5.0      | 5.0     | Yes / No                                     |                                           |
| 9-2-15 | 7:59 AM | 1:56 PM           | 7:1 hr   | 4.7 psi  | 5.0 psi | <input checked="" type="checkbox"/> Yes / No | <b>PASSED BY ANOTHER GROUP TO HEADERS</b> |
|        |         |                   |          |          |         | Yes / No                                     |                                           |
|        |         |                   |          |          |         | Yes / No                                     |                                           |
|        |         |                   |          |          |         | Yes / No                                     |                                           |

COMMENTS: \_\_\_\_\_

Completed By: *Monte Woodard*  
 Witnessed By: *[Signature]*

Date: *9-2-15*  
 Date: *9/2/15*



# PRESSURE TEST FORM

|                                              |                      |
|----------------------------------------------|----------------------|
| Project: <u>ARIA</u>                         | Test No.: <u>38</u>  |
| System: <u>AWN Drain TANK secondary pipe</u> | Date: <u>9/13/15</u> |
| Job #: <u>830382-F</u>                       |                      |

### Brief Description of Test and Boundaries

REF #37

|                              |                                                                                    |
|------------------------------|------------------------------------------------------------------------------------|
| Drawing / Spool #:           | <u>10x6 AWN Drain Secondary Pipe From Equalization TANK -010 (MEZZ) TO AWT-100</u> |
| Specification Title Section: | <u>AWN DRAIN 10"x6" From Equalization TANK -010</u>                                |
| Allowable Pressure Change:   | <u>0</u> PSIG                                                                      |
| Test Medium:                 | <u>AIR</u>                                                                         |
| Point of Connection:         | <u>Secondary Pipe EQ TANK 010</u>                                                  |
| Point of Termination:        | <u>Secondary Pipe AWN TANK -100</u>                                                |

### Test Results

| Date          | Time           |                |               | Pressure      |               | Passed          | Comments                                |
|---------------|----------------|----------------|---------------|---------------|---------------|-----------------|-----------------------------------------|
|               | Start          | End            | Duration      | Start         | End           | (Yes / No)      |                                         |
| <u>9-3-15</u> | <u>6:00 AM</u> | <u>6:00 AM</u> | <u>24 Hrs</u> |               |               | <u>Yes / No</u> |                                         |
| <u>9/4/15</u> | <u>6:21 AM</u> | <u>8:08 AM</u> | <u>7 HR</u>   | <u>5.0 PS</u> | <u>5.0 PS</u> | <u>Yes / No</u> | <u>Passes from tank 010 to tank 100</u> |
|               |                |                |               |               |               | Yes / No        |                                         |
|               |                |                |               |               |               | Yes / No        |                                         |
|               |                |                |               |               |               | Yes / No        |                                         |

COMMENTS: \_\_\_\_\_

Completed By: Monte Morehead  
 Witnessed By: [Signature]

Date: 9-4-15  
 Date: 9/4/15



# PRESSURE TEST FORM

|                                              |                        |
|----------------------------------------------|------------------------|
| Project: <i>ARIA</i>                         | Test No.: <i>44</i>    |
| System: <i>AWN Drain TANK Secondary pipe</i> | Job #: <i>330382-I</i> |
|                                              | Date: <i>9/3/15</i>    |

### Brief Description of Test and Boundaries

*REF 27*

|                              |                                                                                         |
|------------------------------|-----------------------------------------------------------------------------------------|
| Drawing / Spool #:           | <i>AWN Drain Secondary Pipe From EQUALIZATION TANK-010 (Mezz) TO AWN T-400 10" x 6"</i> |
| Specification Title Section: | <i>AW Drain 10x6 From EQUALIZATION TANK -010</i>                                        |
| Allowable Pressure Change:   | <i>0</i> PSIG                                                                           |
| Test Medium:                 | <i>AIR</i>                                                                              |
| Point of Connection:         | <i>secondary pipe EQ TANK -010</i>                                                      |
| Point of Termination:        | <i>Secondary pipe TANK -400</i>                                                         |

### Test Results

| Date          | Time           |                |               | Pressure       |                | Passed                                              | Comments                             |
|---------------|----------------|----------------|---------------|----------------|----------------|-----------------------------------------------------|--------------------------------------|
|               | Start          | End            | Duration      | Start          | End            | (Yes / No)                                          |                                      |
| <i>9-3-15</i> | <i>6:00 AM</i> | <i>6:00 AM</i> | <i>24 Hrs</i> |                |                | <i>Yes / No</i>                                     |                                      |
| <i>9/4/15</i> | <i>6:23 AM</i> | <i>8:12 AM</i> | <i>7 Hrs</i>  | <i>5.2 PSI</i> | <i>5.4 PSI</i> | <input checked="" type="checkbox"/> <i>Yes / No</i> | <i>Passing from tank to tank 400</i> |
|               |                |                |               |                |                | <i>Yes / No</i>                                     |                                      |
|               |                |                |               |                |                | <i>Yes / No</i>                                     |                                      |
|               |                |                |               |                |                | <i>Yes / No</i>                                     |                                      |

COMMENTS: \_\_\_\_\_

Completed By: *Monte Morehead*  
 Witnessed By: *Paul John*

Date: *9-4-15*  
 Date: *9/4/15*



## **HAZARDOUS WASTE TANK SYSTEM ASSESSMENT**

### **ARIA Heavy Metals Rinsate (HMR) System Santa Clara, CA**

*Prepared for:*  
**Apple, Inc.**  
1 Infinite Loop  
Cupertino, California 95014

*Prepared by:*  
**TRC**  
10680 White Rock Road, Suite 100  
Rancho Cordova, CA 95670

**October 2022**

# HAZARDOUS WASTE TANK SYSTEM ASSESSMENT

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## **I. INTRODUCTION**

This assessment is specifically for the Heavy Metals Rinsate (HMR) System at the Apple, Inc. (Apple) ARIA facility (Facility), located at 3250 Scott Boulevard in Santa Clara, California.

This assessment was performed in accordance with the requirements of Section 66265.192 of Title 22 of the California Code of Regulations (22 CCR 66265.192), and included a physical inspection of the tank system and an evaluation of secondary containment. Portions of the HMR system were assessed separately in 2015 and 2019. This is a 5-year re-assessment per 22 CCR 66265.192(h)(1) to bring all systems at the facility onto the same assessment schedule.

## **II. PURPOSE**

22 CCR 66265.192 requires that owners of a new hazardous waste tank system (subject to 22 CCR 67450.2 "Permit by Rule") to ensure that the tank system is adequately designed and constructed, and obtain and keep on file at the Facility a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California that attests to the tank system's integrity.

The written assessment shall determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored or treated to ensure that it will not collapse, rupture, or fail.

At a minimum, the assessment for an above-ground system shall include the following information: 1) design standard(s) according to which the tank and ancillary equipment have been constructed; 2) hazardous characteristics of the waste(s) to be handled; 3) foundation and seismic anchorage design.

All new tank systems shall be tested for tightness, and determined to be free of leaks before being placed in use.

In accordance with 22 CCR 66265.192(h)(1), the assessment is valid for a maximum period of five (5) years, and shall include all of the information described in 22 CCR 66265.192(k). The required assessment information is presented in the following Section III.

## **III. ASSESSMENT AND FINDINGS**

### **22 CCR 66265.192(k)(1)**

The tank system consists of three lift stations (SLW-LS2, HMR-LS, HMC-LS) and the Heavy Metals Concentrate Collection Cabinet (HMC-CC) that were previously assessed and certified when newly installed in 2015, the equalization tank (HMR-TNK-2), a pH adjustment tank (HMR-TNK-3), equalization tank (HMR-TNK-4), vacuum distillation evaporator (VDE-1), heavy metal concentrate tank (HMC-TNK-2), and ancillary piping. The slurry waste lift station (SLW-LS2) is a vertical rectangular tank constructed of white polypropylene and has a primary tank capacity of 142 gallons. The heavy metal rinsate and concentrate lift stations are vertical rectangular tanks constructed of white polypropylene and have a primary tank capacity of 80 gallons and a secondary tank capacity of 110 gallons. The first equalization tank (HMR-TNK-2) is a vertical cylindrical tank constructed of high density polyethylene with a capacity of 1100 gallons. The pH adjustment tank (HMR-TNK-3) is a vertical rectangular tank constructed of

white polypropylene with a capacity of 675 gallons. The second equalization tank (HMR-TNK-4) is a vertical rectangular tank constructed of white polypropylene with a capacity of 540 gallons. HMR-TNK-3 and HMR-TNK-4 are partitions of a single horizontal rectangular tank. The heavy metal concentrate tank (HMC-TNK-2) is a vertical cylindrical tank constructed of fiberglass and vinyl ester resin (FRP) with a capacity of 2300 gallons.

## **22 CCR 66265.192(k)(2)**

### HMR-TNK-2

The first equalization tank (HMR-TNK-2) is constructed of variable thickness HDPE per ASTM D1998 design standards. Ancillary piping is Schedule 40 (SCH-40) CPVC with clear PVC containment pipe, where applicable. See Figure 1 for pipe sizes. The HMR-TNK-2 skid includes two (2) 5-hp vertical centrifugal pumps. The tank is 5 feet 4 inches in diameter and 7 feet 5 inches in height. A drawing of HMR-TNK-2, with dimensions is included in Attachment 1.

### HMR-TNK-3 and HMR-TNK-4

The heavy metal rinsate pH adjustment (HMR-TNK-3) and equalization (HMR-TNK-4) tanks are constructed of ¾"-thick white polypropylene per DVS 2205 design standards. Ancillary piping is CPVC piping with clear PVC containment pipe as well as PFA tubing with clear PVC containment pipe, where applicable. See Figure 1 for pipe sizes. The heavy metal rinsate pH adjustment tank uses two (2) polypropylene pneumatic diaphragm pumps each capable of 30 GPM at 30 feet TDH using 20 SCFM of air at 40 PSI. The complete tank (HMR-TNK-3 and HMR-TNK-4) is 5 feet wide, 7 feet long, and 6 feet tall. A drawing of HMR-TNK-3&4, with dimensions is included in Attachment 2.

### HMC-TNK-2

The heavy metal concentrate tank is constructed of variable thickness fiberglass and vinyl ester resin (Hetrion 992) per ASTM D3299 and D4097 design standards. Tank system structural design is in accordance with CBC 2013 and ASCE 7-10. Ancillary piping is Schedule 80 (SCH-80) CPVC piping with clear PVC containment pipe, where applicable. See Figure 1 for pipe sizes. The heavy metal concentrate station is pumped out as needed using a mobile vacuum pump. The tank is 7 feet in diameter and 8 feet in height. A drawing of the tank, with dimensions, is included in Attachment 3.

### HMC-LS/HMR-LS/SLW-LS2/HMC-CC

The heavy metals rinsate and concentrate lift stations, the slurry waste lift station and the heavy metals concentrate collection cabinet are constructed of ¾"-thick white polypropylene per DVS 2205 design standards. Structural design is in accordance with CBC 2013 and ASCE 7-10. Ancillary piping is Schedule 80 (SCH-80) PVC with clear PVC containment pipe, where applicable. See Figure 1 for pipe sizes. The lift stations each utilize two (2) internal 1-hp stainless steel submersible pumps. Tank drawings with dimensions are included in Attachment 5-7.

### **22 CCR 66265.192(k)(3)**

HMR-TNK-2 and HMC-TNK-2 and their ancillary equipment were constructed in 2015, and repurposed as part of this system in 2019. HMR-TNK-3, HMR-TNK-4, and ancillary piping are newly constructed. HMR-LS, HMC-LS, HMC-CC and SLW-LS2 and their ancillary equipment were constructed in 2015

### **22 CCR 66265.192(k)(4)**

All tanks are located on the ground level within an epoxy-coated concrete berm area. The bermed area is sloped to drain to collection sumps that are equipped with liquid sensors that would detect a leak from a tank or related ancillary piping.

The lift stations are double-walled and the space between the primary and secondary tanks is equipped with a liquid sensor that would detect a leak from the primary tank. The lift station pit is epoxy-coated and is equipped with a liquid sensor that would detect a leak from the lift stations and related ancillary piping.

The heavy metals concentrate collection cabinet is equipped with an internal liquid sensor that would detect a leak from the drums or elsewhere within the cabinet.

All automated systems, including liquid sensors for leak detection, are tested regularly to confirm operation as designed.

### **22 CCR 66265.192(k)(5)**

The tank system is entirely above-ground and materials are not subject to corrosion.

### **22 CCR 66265.192(k)(6)**

All tanks and lift stations are equipped with ultrasonic level sensors to prevent overflow. All automated systems, including liquid level sensors and pump controls are tested regularly to confirm operation as designed.

### **22 CCR 66265.192(k)(7)**

All tanks and ancillary piping are located on the ground level within an epoxy-coated concrete berm area. The bermed area is sloped to drain to a collection sump and is also connected by a weir to the lift station pit (also epoxy-coated concrete) with adequate capacity to contain the full volume of the tanks. Double walled piping is also fitted with ports that would allow for collection of the leaked liquid when there is not a direct connection back to the lift stations.

The slurry waste lift (SLW-LS2) station and heavy metals lift stations (HMC-LS/HMR-LS) are set within secondary containment tanks (also 3/4"-thick polypropylene) with capacity of 142 and 110 gallons, respectively. The heavy metals concentrate lift station (HMC-CC) has a secondary containment capacity of 78 gallons.

Along with the leak detection systems described above, the secondary containment for the tank system meets the standards of 22 CCR 66265.192(j) and 22 CCR 66265.193.



**22 CCR 66265.192(k)(8)**

The system generally handles heavy metals (potentially toxic) waste liquids generated from laboratory activities.

**22 CCR 66265.192(k)(9)**

No structural damage or inadequate construction/installation items (cracks, punctures, or damaged fittings) were observed.

**22 CCR 66265.192(k)(10)**

All ancillary pipe was leak tested using air-pressure when installed, test results are included as Attachment 4.

All tanks and lift stations were leak tested by the manufacturer prior to transport to the Facility.

**22 CCR 66265.192(k)(11)**

Based on the findings of this assessment, the tank system has an estimated remaining service life of approximately 20 years under existing conditions. The estimated remaining service life should be re-evaluated every five (5) years, in conjunction with the re-assessment in accordance with the requirements of 22 CCR 66265.192(h)(1).

IV. CERTIFICATION

**ARIA**  
**Heavy Metals Rinsate System**  
**October 2022**

---

22 CCR 66265.192 requires that owners of a new hazardous waste tank system (subject to 22 CCR 67450.2 "Permit by Rule") ensure that the tank system is adequately designed and constructed, and obtain and keep on file at the Facility a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California that attests to the tank system's integrity.

The preceding written assessment has determined that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored or treated to ensure that it will not collapse, rupture, or fail. This assessment for an above-ground system considered the following: 1) design standard(s) according to which the tank and ancillary equipment have been constructed; 2) hazardous characteristics of the waste(s) to be handled; 3) foundation and seismic anchorage design.

The tank system was inspected on October 19, 2022. The visual inspection found none of the following to be in evidence: leaks, weld breaks, punctures, scrape of protective coatings, cracks, corrosion, structural damage or installation defects.

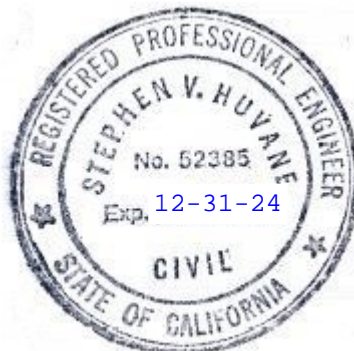
As required by 22 CCR 66265.192(k)(11), based on the findings of this assessment, I estimate that the new tank system has at least twenty (20) years of service life under current conditions. In accordance with 22 CCR 66265.192(h)(1), this assessment is valid for a maximum period of five (5) years and the tank system should be re-assessed at that time to obtain a new estimate of remaining service life.

**Based on my assessment of the tank system, I can attest that the tank system has sufficient structural integrity, is acceptable for transferring, storing and treating the intended hazardous waste, and is suitably designed to achieve the requirements under 22 CCR 66265.192.**

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*



Stephen V. Huvane, P.E.  
Civil (CA) No. 52385

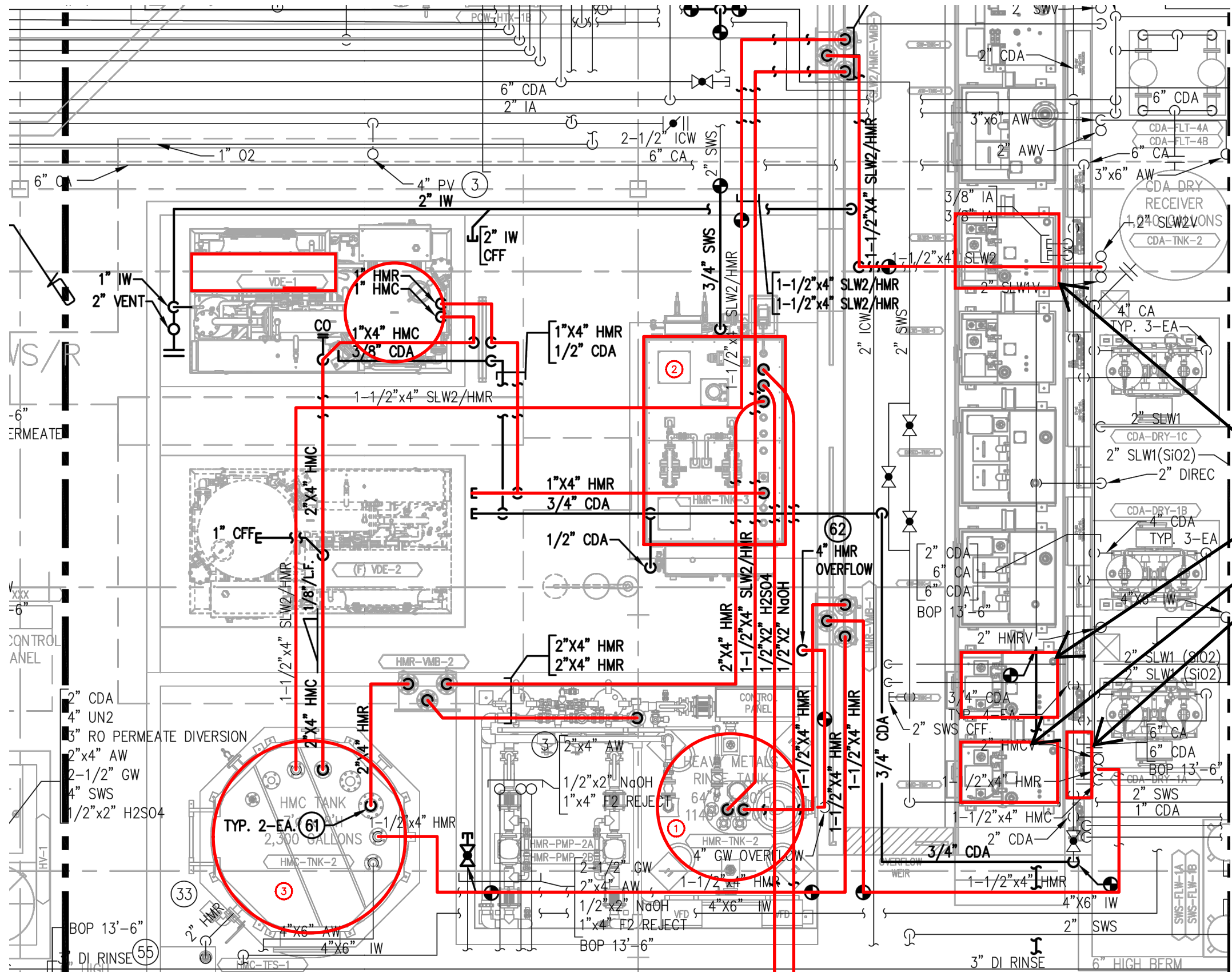


12/21/22

Date

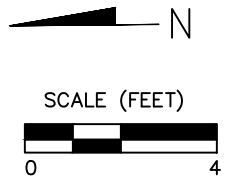
**FIGURE 1**

**TANK SYSTEM LAYOUT**



- NOTES**
- ① HMR-TNK-2 ANCILLARY PIPING IS SCHEDULE 40 (SCH-40) CPVC WITH CLEAR PVC CONTAINMENT PIPE.
  - ② HMR-TNK-3&4 ANCILLARY PIPING IS SCHEDULE 80 (SCH-80) CPVC WITH CLEAR PVC CONTAINMENT PIPE FOR WATER LINES AND PFA TUBING WITH CLEAR PVC CONTAINMENT PIPE FOR pH CONTROL FEED CHEMICALS.
  - ③ HMC-TNK-2 ANCILLARY PIPING IS SCHEDULE 80 (SCH-80) CPVC PIPING WITH CLEAR PVC CONTAINMENT PIPE

SLW-LS2  
HMR-LS  
HMC-LS  
HMC-CC

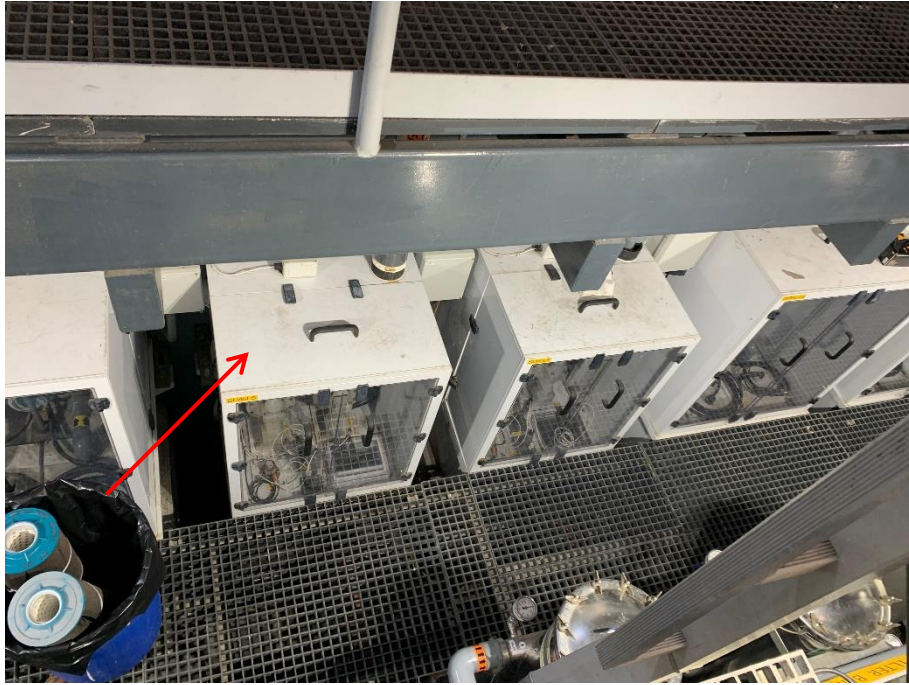


**LEGEND**  
— SYSTEM COMPONENTS ASSESSED

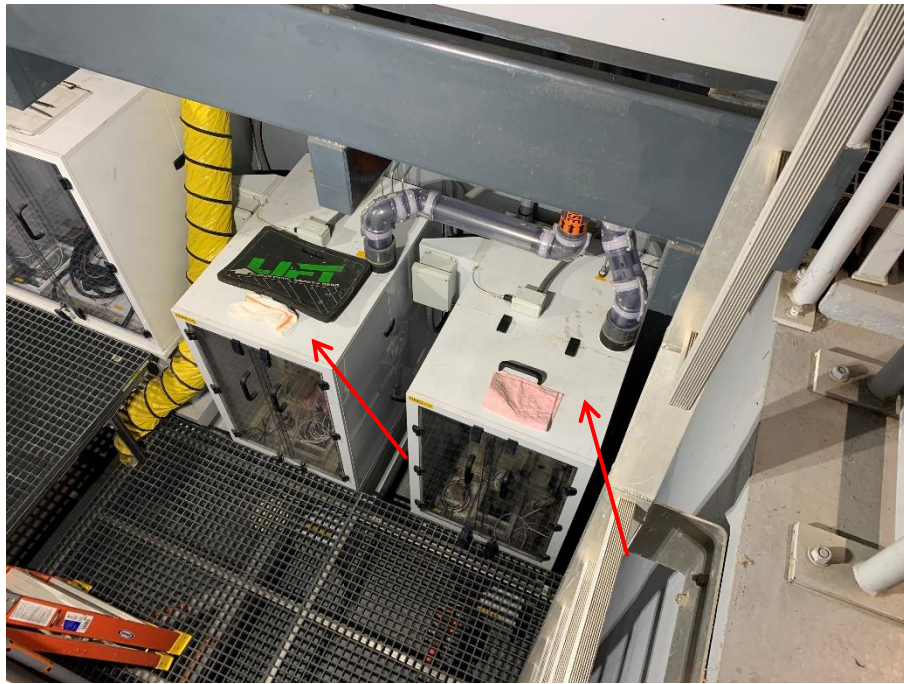
## TANK SYSTEM LAYOUT HEAVY METAL RINSATE SYSTEM

**APPENDIX A**

**PHOTOGRAPHS**  
**(OCTOBER 19, 2022)**



Slurry Waste Lift Station (SLW-LS2) in Containment Pit



Heavy Metal Rinsate and Concentrate Lift Stations in Containment Pit



HMR-TNK-2



Heavy Metals Concentrate Collection Cabinet (HMC-CC)



HMR-TNK-3&4 and piping to Vacuum Distillation Evaporator (VDE-1)



Piping from HMR-TNK-3 to VDE-1





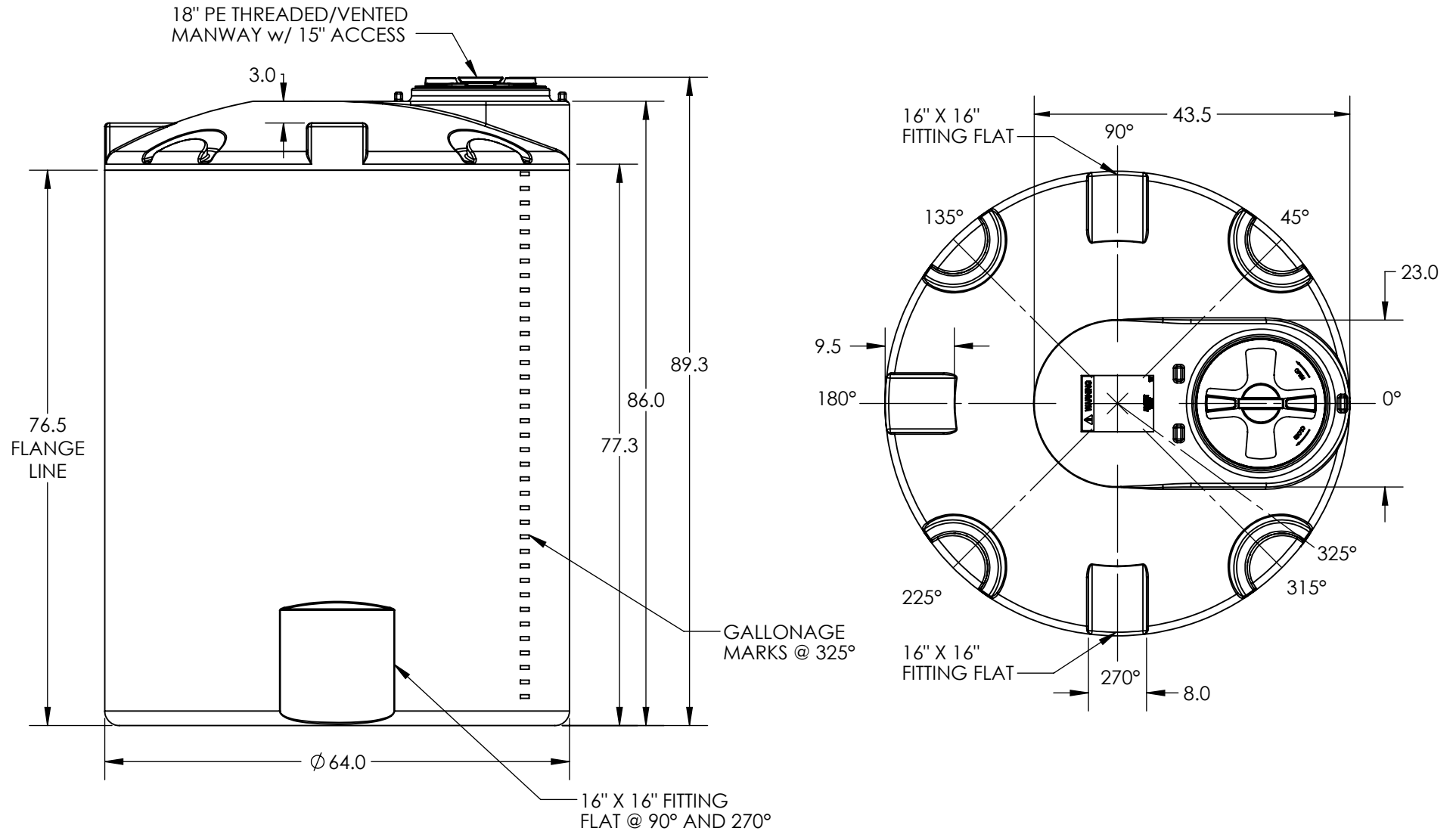
Piping to VDE-1 (left) and piping to HMC-TNK-2 (right)



HMC-TNK-2 and piping to Heavy Metal Concentrate Pull Station (HMC-TFS-1)

**ATTACHMENT 1**

**HMR-TNK-2 INFORMATION**



**\*ALL EXTERNAL PIPING MUST BE INDEPENDENTLY SUPPORTED.**  
**\*ONLY BASE FITTINGS TO BE LEFT INSTALLED AT TIME OF SHIPMENT PER SII PROCEDURE.**  
**\*Consult Snyder's Guidelines for Use and Installation prior to delivery.**  
 Available on-line at <http://www.snyderindustriestanks.com/Technical>  
**ALL DIMENSIONS ARE IN INCHES, NOMINAL, & SUBJECT TO CHANGE WITHOUT NOTICE.**  
**ALL DIMENSIONS ON ROTATIONAL MOLDED PARTS ARE SUBJECT TO A ± 3% TOLERANCE.**

|                                                                                                                                                                                                                                   |          |            |                                                                                |                     |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|--------------------------------------------------------------------------------|---------------------|-----------------|
| DO NOT SCALE                                                                                                                                                                                                                      | DRAWN BY | DATE       |                                                                                | TITLE:              | REVISION        |
| STATUS:                                                                                                                                                                                                                           | ET3      | 07/30/2013 |                                                                                | ASM TK 1100VDT X 64 | A               |
| © SNYDER INDUSTRIES INC., 2014                                                                                                                                                                                                    |          |            | 4700 Fremont Street<br>Lincoln, NE 68504<br>(402) 467-5221<br>www.snyderet.com | PART NO.            | ENG. ID.        |
| ALL DIMENSIONS, DESIGNS, AND INFORMATION ON THIS PRINT MUST BE CONSIDERED PROPRIETARY TO SNYDER INDUSTRIES, INC. AND MAY NOT BE USED, COPIED, OR DISTRIBUTED WITHOUT WRITTEN PERMISSION OF AN OFFICER (OR HIS AGENT) OF THE FIRM. |          |            |                                                                                | 183000N__01         | D001111         |
|                                                                                                                                                                                                                                   |          |            |                                                                                |                     | SHEET<br>1 OF 1 |

**ATTACHMENT 2**

**HMR-TNK-3&4 INFORMATION**

# FABRICATION STATUS

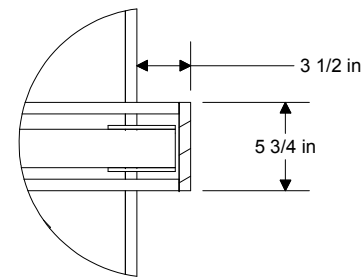
PLEASE CHECK BOX AND SIGN WHEN COMPLETED

- COMPLETED NO CHANGES
- COMPLETED PER REDLINE CHANGES
- NOT COMPLETED, DESIGN CHANGES REQUIRED

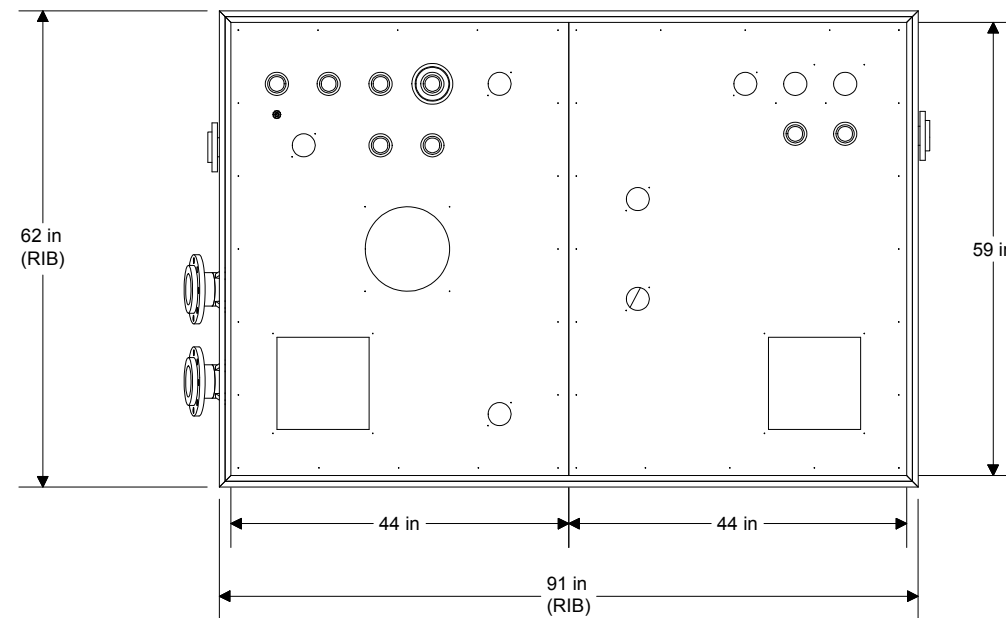
NAME \_\_\_\_\_ DATE \_\_\_\_\_

### NOTES:

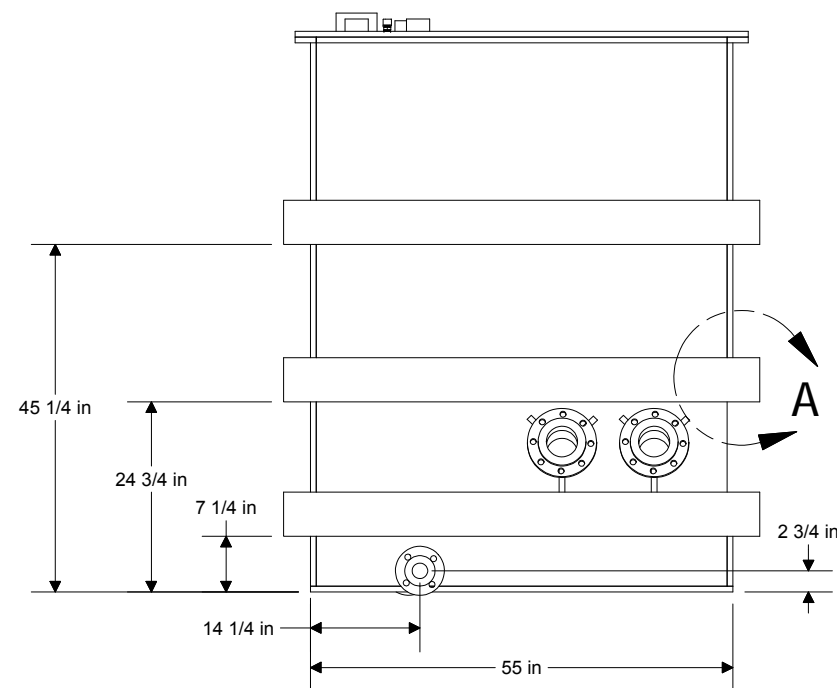
1. PRIMARY TANK SHALL BE FABRICATED FROM 3/4" THICK POLYPROPYLENE.
2. ALL PIPING AND FITTINGS TO BE CPVC SCH 80.
3. ALL SURFACES TO BE SEALED WITH EPDM GASKET TAPE.
4. SOME SUPPORTS NOT SHOWN FOR CLARITY



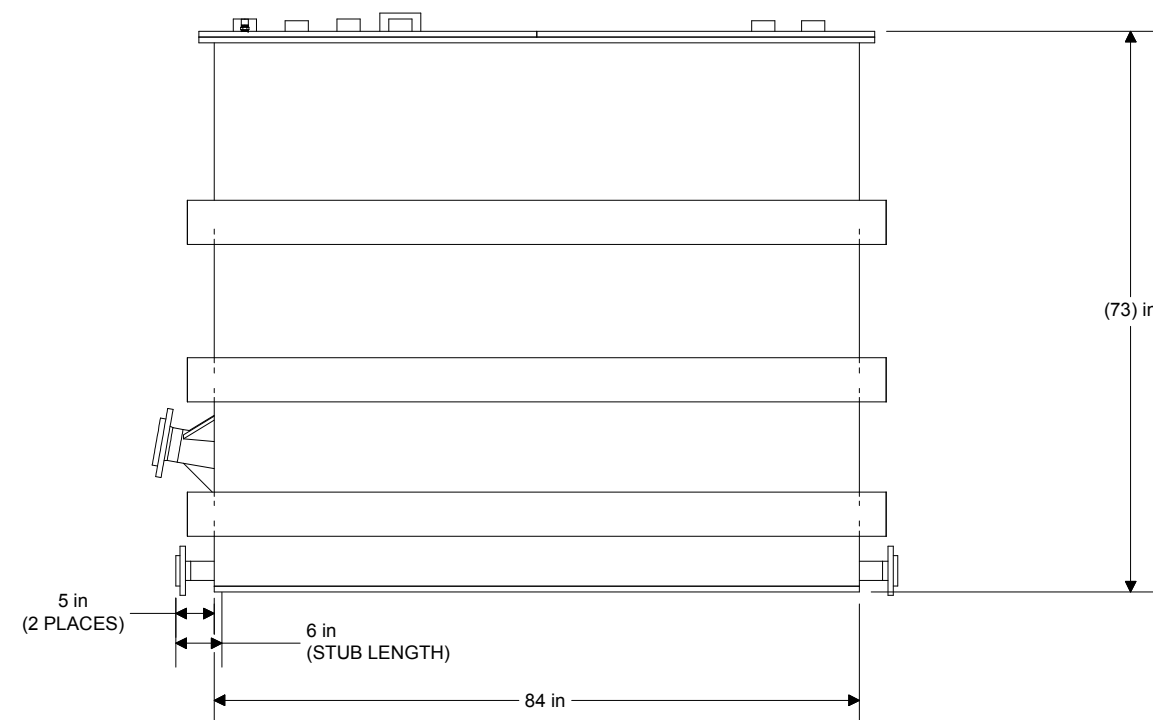
DETAIL A



PLAN VIEW



SIDE VIEW



ELEVATION VIEW

| REV.            | DATE:      | BY: | DESCRIPTION            |
|-----------------|------------|-----|------------------------|
| 0               | 11/21/2018 | JB  | ISSUED FOR FABRICATION |
| APPROVALS       |            |     | DATE                   |
| DRAWN BY: JB    |            |     | 11/21/2018             |
| CHECKED BY: JB  |            |     | 11/21/2018             |
| APPROVED BY: SS |            |     | 11/21/2018             |

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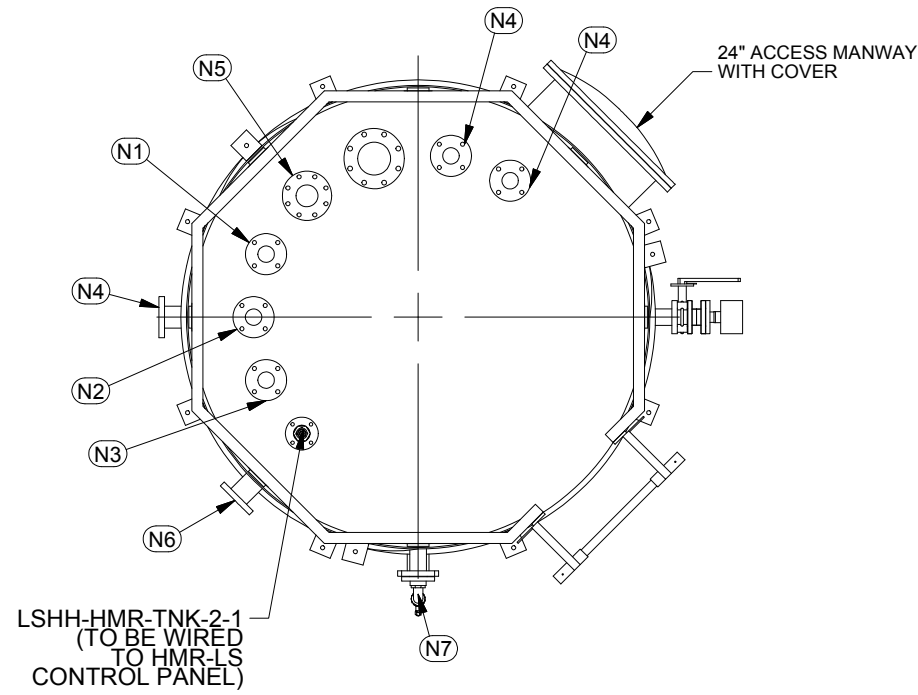
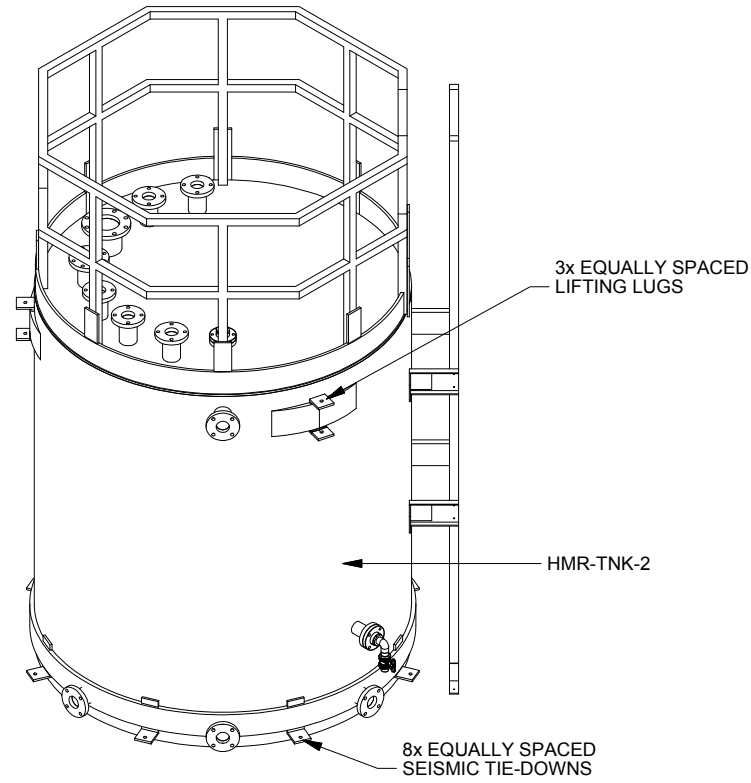
|                                                                                  |               |
|----------------------------------------------------------------------------------|---------------|
| TITLE: APPLE, INC. - ARIA<br>500 GALLON PRODELTA BATCH<br>MECHANICAL FABRICATION | REVISION<br>0 |
|----------------------------------------------------------------------------------|---------------|

|            |                           |
|------------|---------------------------|
| SIZE<br>B  | DWG. NO.<br>181320-MF-102 |
| SCALE: NTS | SHEET: 2 OF 4             |

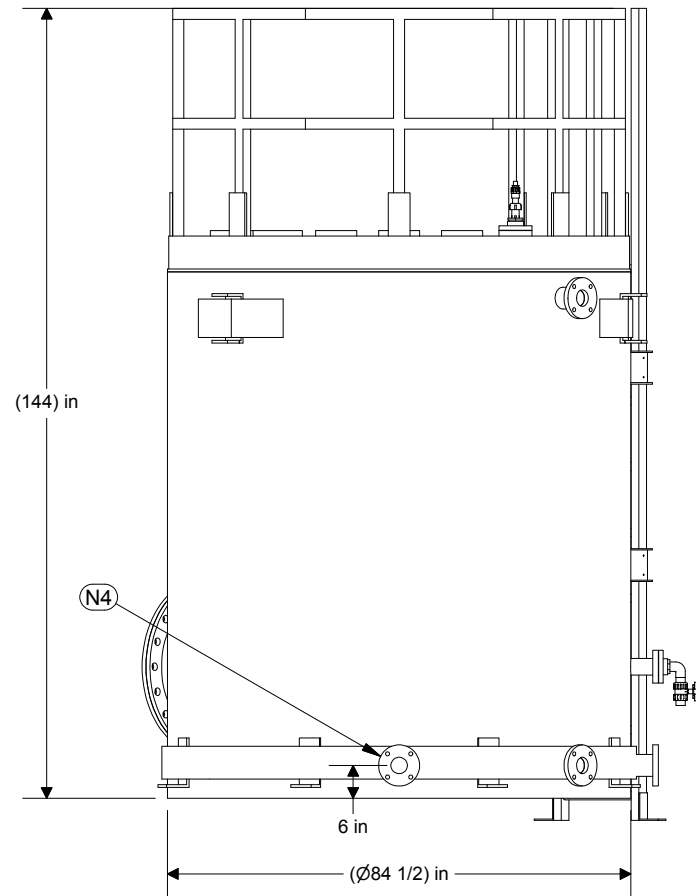
**ATTACHMENT 3**

**HMC-TNK-2 INFORMATION**

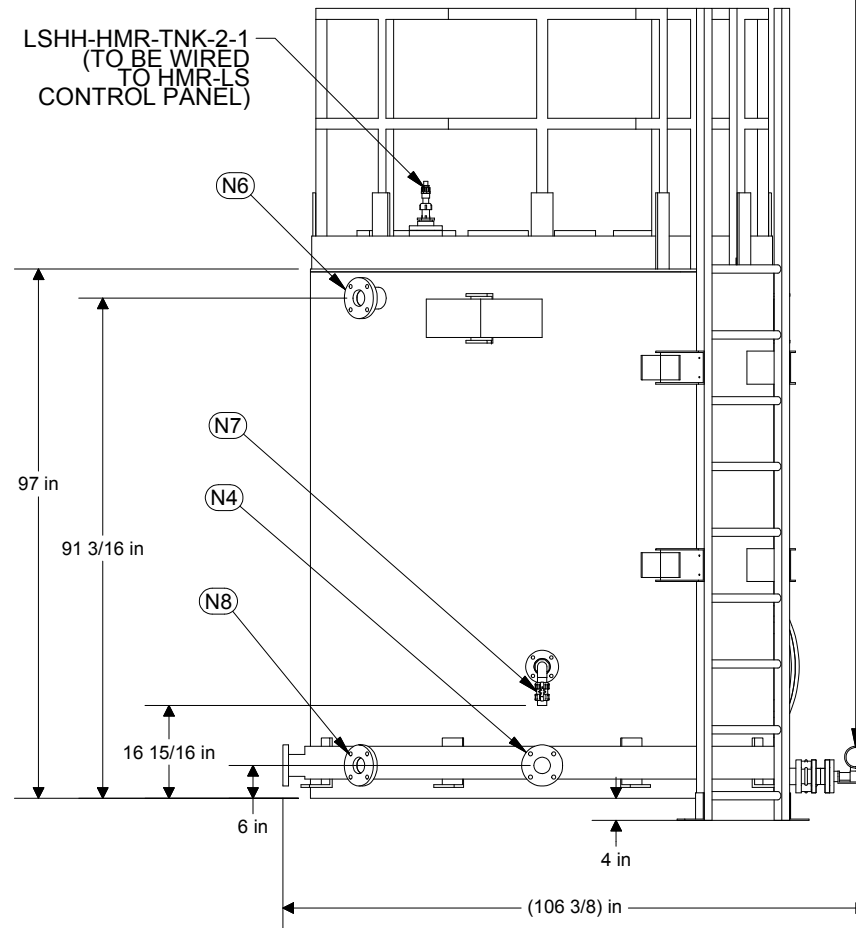
# ISOMETRIC VIEW



# PLAN VIEW

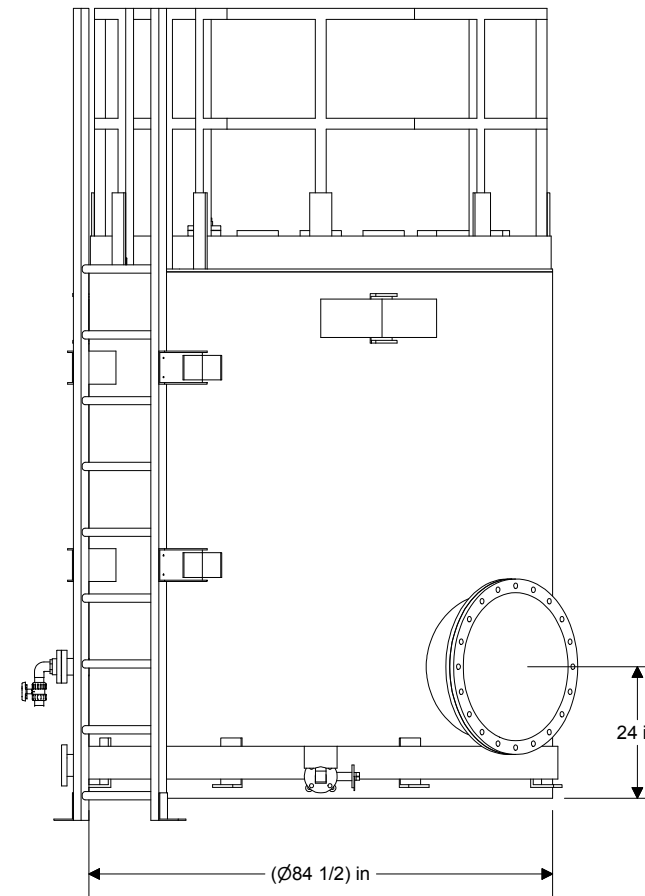


# LEFT ELEVATION VIEW



# FRONT ELEVATION VIEW

LIT-HMR-TNK-2-1  
(TO BE WIRED  
TO HMR-LS  
CONTROL PANEL)



# RIGHT ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                          |
|-----------------|-------------|-----|--------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                  |
| N1              | 3" FLANGE   | 1   | INLET FROM GW-LS         |
| N2              | 3" FLANGE   | 1   | INLET FROM SWS-LS        |
| N3              | 3" FLANGE   | 1   | INLET FROM HMR DIVERSION |
| N4              | 3" FLANGE   | 5   | SPARE                    |
| N5              | 4" FLANGE   | 1   | VENT                     |
| N6              | 3" FLANGE   | 1   | OVERFLOW                 |
| N7              | 1" FNPT     | 1   | SAMPLE PORT              |
| N8              | 3" FLANGE   | 1   | SUCTION PORT             |

### NOTES:

- MATERIALS OF CONSTRUCTION:
  - TANK TO BE FABRICATED FROM FRP.
  - ALL PIPING AND FITTINGS TO BE CPVC SCH 80.
  - HARDWARE TO BE 18-8 SS.
- ALL SURFACES TO BE SEALED WITH EPDM GASKET.
- SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, PROVIDED AND INSTALLED BY OTHERS.
- INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANKS.
- APPROXIMATE EQUIPMENT WEIGHTS:
  - DRY WEIGHT: 2000 LBS
  - OPERATING WEIGHT: 23000 LBS

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 4    | 03/31/2015 | MF  | ISSUED FOR FABRICATION   |
| 3    | 01/30/2015 | MF  | RESUBMITTED FOR APPROVAL |
| 2    | 01/13/2015 | MF  | RESUBMITTED FOR APPROVAL |
| 1    | 12/02/2014 | MF  | SUBMITTED FOR APPROVAL   |
| 0    | 10/21/2014 | MF  | DRAFT                    |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MF | 10/21/2014 |
| PROJECT ENG.:        | JB |            |
| ENGINEERING MANAGER: | SS |            |

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|        |                                                                             |               |
|--------|-----------------------------------------------------------------------------|---------------|
| TITLE: | ARIA<br>HEAVY METALS RINSE DIVERSION TANK<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>4 |
|--------|-----------------------------------------------------------------------------|---------------|

|           |                           |
|-----------|---------------------------|
| SIZE<br>B | DWG. NO.<br>141190-MG-701 |
|-----------|---------------------------|

**ATTACHMENT 4**

**LEAK TEST RECORDS**



MULTIPLE SYSTEMS PRESSURE RETENTION TESTS REPORT  
AS OF 4/16/2019  
(READ ONLY/PRINT)

PROPOSAL # 20826  
REPORT DATE 3/21/2017  
REPORT # 1245

Total Number of Proposals Found = 39

CLIENT: ARIA / Apple CONTRACTOR: Murray Company

TEST LOCATION: ARIA - 3250 Scott Blvd. - Santa Clara / Mechanical Yard TOOL: Waste Systems

| SYSTEM                                                                                                | WORKING PRESSURE | START    |        | FINISH   |        | PASS | FAIL |
|-------------------------------------------------------------------------------------------------------|------------------|----------|--------|----------|--------|------|------|
|                                                                                                       |                  | PRESSURE | TIME   | PRESSURE | TIME   |      |      |
| Heavy Metal Rinse: Tested 2" Primary CPVC Line from HMR-Tank-2 POC to HMR-VMB-2 & to HMC-Tank -2 POC. | NA               | 56psi    | 6:00am | 56psi    | 7:00am | DM   |      |
| Heavy Metal Rinse: Tested 4" Containment Line from HMR-Tank-2 POC to HMR-VMB-2 & to HMC-Tank -2 POC.  | NA               | 6psi     | 6:00am | 6psi     | 7:00am | DM   |      |
|                                                                                                       |                  |          |        |          |        |      |      |
| Heavy Metal Concentrate: Tested 1" to 2" Primary CPVC Line from VDE-1 POC to Main & HMC-Tank-2 POC.   | NA               | 58psi    | 6:00am | 58psi    | 7:00am | DM   |      |
| Heavy Metal Concentrate: Tested 4" Containment Line from VDE-1 POC to Main & HMC-Tank-2 POC.          | NA               | 6psi     | 6:00am | 6psi     | 7:00am | DM   |      |
|                                                                                                       |                  |          |        |          |        |      |      |
| Sodium Hydroxide: Tested 1/2" Primary PFA Line from Lift Station POC to HMR-Tank-3 POC.               | NA               | 150psi   | 6:00am | 150psi   | 7:00am | DM   |      |
| Sodium Hydroxide: Tested 2" Containment Line from Lift Station POC to HMR-Tank-3 POC.                 | NA               | 6psi     | 6:00am | 6psi     | 7:00am | DM   |      |
|                                                                                                       |                  |          |        |          |        |      |      |
|                                                                                                       |                  |          |        |          |        |      |      |

TYPE: PNEUMATIC  HYDROSTATIC  MEDIA Nitrogen  
TEST GAUGE: MAKE Exsel SERIAL # 49899, 49829, 52218, PSIG: 0-200, 0-200, 0-15PSI  
COMMENTS: SENSITIVITY: 1psi CALIBRATION DUE DATE: 1/10/20 & 2/27/20

TEST WITNESSED BY: Demar Mills

TEST DATE: 3/21/2017

TEST PERFORMED BY: MURRAY COMPANY

DATE: 3/21/2017

MULTIPLE SYSTEMS PRESSURE RETENTION TESTS REPORT  
AS OF 4/16/2019  
(READ ONLY/PRINT)

PROPOSAL # 20826  
REPORT DATE 3/21/2017  
REPORT # 1246

Total Number of Proposals Found = 39

CLIENT: ARIA / Apple CONTRACTOR: Murray Company

TEST LOCATION: ARIA - 3250 Scott Blvd. - Santa Clara / Mechanical Yard TOOL: Waste Systems

| SYSTEM                                                                               | WORKING PRESSURE | START    |        | FINISH   |        | PASS | FAIL |
|--------------------------------------------------------------------------------------|------------------|----------|--------|----------|--------|------|------|
|                                                                                      |                  | PRESSURE | TIME   | PRESSURE | TIME   |      |      |
| Sulfuric Acid: Tested 1/2" Primary PFA Line from Lift Station POC to HMR-Tank-3 POC. | NA               | 150psi   | 6:00am | 150psi   | 7:00am | DM   |      |
| Sulfuric Acid: Tested 2" Containment Line from Lift Station POC to HMR-Tank-3 POC.   | NA               | 6psi     | 6:00am | 6psi     | 7:00am | DM   |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |
|                                                                                      |                  |          |        |          |        |      |      |

TYPE: PNEUMATIC  HYDROSTATIC  MEDIA Nitrogen  
TEST GAUGE: MAKE Perma Cal SERIAL # CN4292 PSIG: 0-300PSI  
COMMENTS: SENSITIVITY: 1psi CALIBRATION DUE DATE: 2/11/10

TEST WITNESSED BY: Demar Mills TEST DATE: 3/21/2017  
TEST PERFORMED BY: MURRAY COMPANY DATE: 3/21/2017

MULTIPLE SYSTEMS PRESSURE RETENTION TESTS REPORT  
AS OF 4/16/2019  
(READ ONLY/PRINT)

PROPOSAL # 20826  
REPORT DATE 3/21/2017  
REPORT # 1243

Total Number of Proposals Found = 39

CLIENT: ARIA / Apple CONTRACTOR: Murray Company

TEST LOCATION: ARIA - 3250 Scott Blvd. - Santa Clara / Mechanical Yard TOOL: Waste Systems

| SYSTEM                                                                                                       | WORKING PRESSURE | START    |        | FINISH   |        | PASS | FAIL |
|--------------------------------------------------------------------------------------------------------------|------------------|----------|--------|----------|--------|------|------|
|                                                                                                              |                  | PRESSURE | TIME   | PRESSURE | TIME   |      |      |
| Heavy Metal Rinse: Tested 1" Primary CPVC Line from HMR-Tank-3 POC to VDE-1 POC.                             | NA               | 52psi    | 6:00am | 52psi    | 7:00am | DM   |      |
| Heavy Metal Rinse: Tested 4" Containment Line from HMR-Tank-3 POC to VDE-1 POC.                              | NA               | 5psi     | 6:00am | 5psi     | 7:00am | DM   |      |
| Heavy Metal Rinse: Tested 1 1/2" Primary CPVC Line from HMR-Lift Station POC to HMR-VMB-1 to HMR-Tank-2 POC. | NA               | 51psi    | 6:00am | 51psi    | 7:00am | DM   |      |
| Heavy Metal Rinse: Tested 4" Containment Line from HMR-Lift Station POC to HMR-VMB-1 to HMR-Tank-2 POC.      | NA               | 5psi     | 6:00am | 5psi     | 7:00am | DM   |      |
| Heavy Metal Rinse: Tested 1 1/2" Primary CPVC Line from HMR-Lift Station POC to HMR-VMB-1 to HMC-Tank-2 POC. | NA               | 51psi    | 6:00am | 51psi    | 7:00am | DM   |      |
| Heavy Metal Rinse: Tested 4" Containment Line from HMR-Lift Station POC to HMR-VMB-1 to HMC-Tank-2 POC       | NA               | 5psi     | 6:00am | 5psi     | 7:00am | DM   |      |
|                                                                                                              |                  |          |        |          |        |      |      |
|                                                                                                              |                  |          |        |          |        |      |      |

TYPE: PNEUMATIC  HYDROSTATIC  MEDIA Nitrogen  
TEST GAUGE: MAKE Exsel SERIAL # 49899, 49829, 52218, PSIG: 0-200, 0-200, 0-15PSI  
COMMENTS: SENSITIVITY: 1psi CALIBRATION DUE DATE: 1/10/20 & 2/27/20

TEST WITNESSED BY: Demar Mills TEST DATE: 3/21/2017  
TEST PERFORMED BY: MURRAY COMPANY DATE: 3/21/2017

MULTIPLE SYSTEMS PRESSURE RETENTION TESTS REPORT  
AS OF 4/16/2019  
(READ ONLY/PRINT)

PROPOSAL # 20826  
REPORT DATE 3/21/2017  
REPORT # 1244

Total Number of Proposals Found = 39

CLIENT: ARIA / Apple

CONTRACTOR: Murray Company

TEST LOCATION: ARIA - 3250 Scott Blvd. - Santa Clara / Mechanical Yard

TOOL: Waste Systems

| SYSTEM                                                                                                  | WORKING PRESSURE | START    |        | FINISH   |        | PASS | FAIL |
|---------------------------------------------------------------------------------------------------------|------------------|----------|--------|----------|--------|------|------|
|                                                                                                         |                  | PRESSURE | TIME   | PRESSURE | TIME   |      |      |
| Slurry Waste / Heavy Metal Rinse: Tested 2" Primary CPVC Line from SLW/HMR-1 VMB POC to HMR-Tank-2 POC. | NA               | 55psi    | 6:00am | 55psi    | 7:00am | DM   |      |
| Slurry Waste / Heavy Metal Rinse: Tested 4" Containment Line from SLW/HMR-1 VMB POC to HMR-Tank-2 POC.  | NA               | 6psi     | 6:00am | 6psi     | 7:00am | DM   |      |
|                                                                                                         |                  |          |        |          |        |      |      |
| Slurry Waste / Heavy Metal Rinse: Tested 2" Primary CPVC Line from SLW/HMR-1 VMB POC to HMC-Tank-2 POC. | NA               | 55psi    | 6:00am | 55psi    | 7:00am | DM   |      |
| Slurry Waste / Heavy Metal Rinse: Tested 4" Containment Line from SLW/HMR-1 VMB POC to HMC-Tank-2 POC.  | NA               | 6psi     | 6:00am | 6psi     | 7:00am | DM   |      |
|                                                                                                         |                  |          |        |          |        |      |      |
| Heavy Metal Rinse: Tested 2" Primary CPVC Line from HMR-Tank-2 POC to HMR-VMB-2 & to HMR-Tank -3 POC.   | NA               | 56psi    | 6:00am | 56psi    | 7:00am | DM   |      |
| Heavy Metal Rinse: Tested 4" Containment Line from HMR-Tank-2 POC to HMR-VMB-2 & to HMR-Tank -3 POC.    | NA               | 6psi     | 6:00am | 6psi     | 7:00am | DM   |      |
|                                                                                                         |                  |          |        |          |        |      |      |
|                                                                                                         |                  |          |        |          |        |      |      |

TYPE: PNEUMATIC  HYDROSTATIC  MEDIA Nitrogen

TEST GAUGE: MAKE Exsel SERIAL # 49899, 49829, 52218, PSIG: 0-200, 0-200, 0-15PSI

COMMENTS: SENSITIVITY: 1psi CALIBRATION DUE DATE: 1/10/20 & 2/27/20

TEST WITNESSED BY: Demar Mills

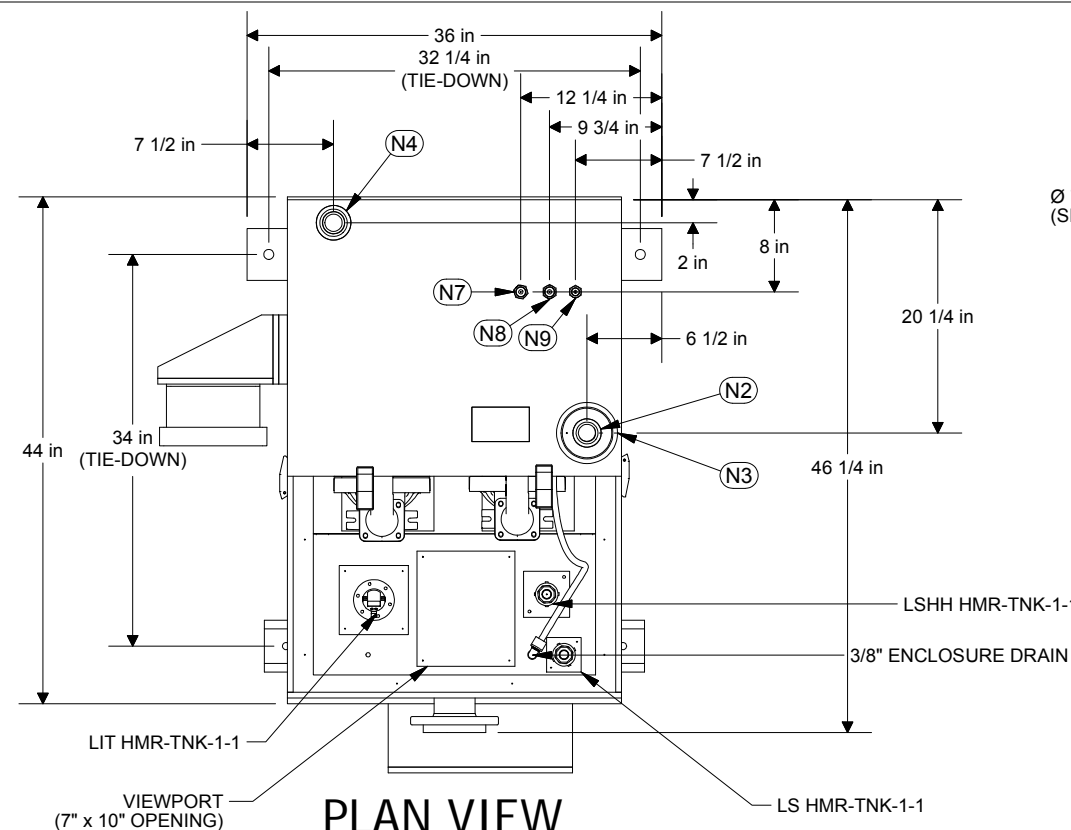
TEST DATE: 3/21/2017

TEST PERFORMED BY: MURRAY COMPANY

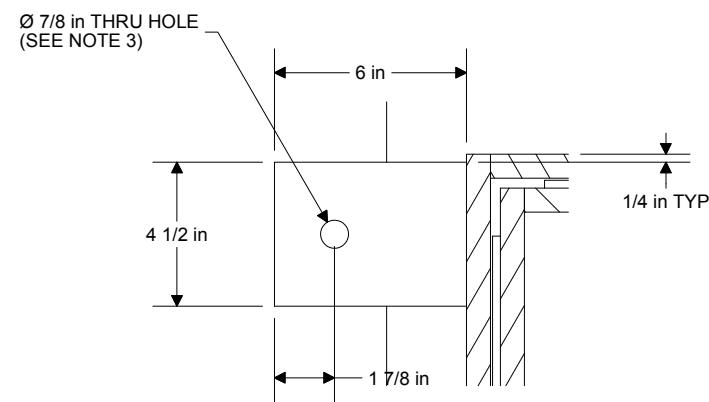
DATE: 3/21/2017

ATTACHMENT 5

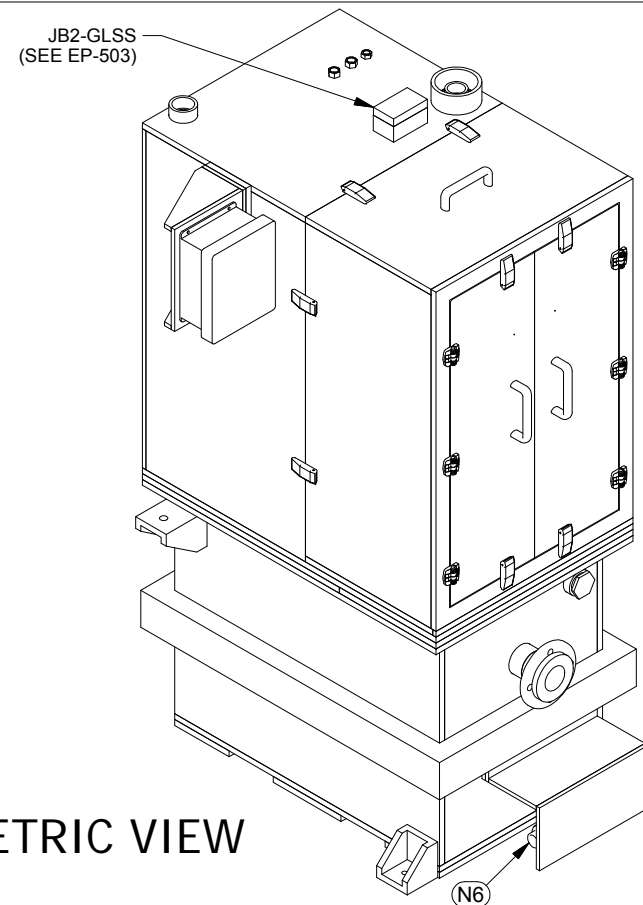
LIFT STATION (HMC-LS and HMR-LS) INFORMATION



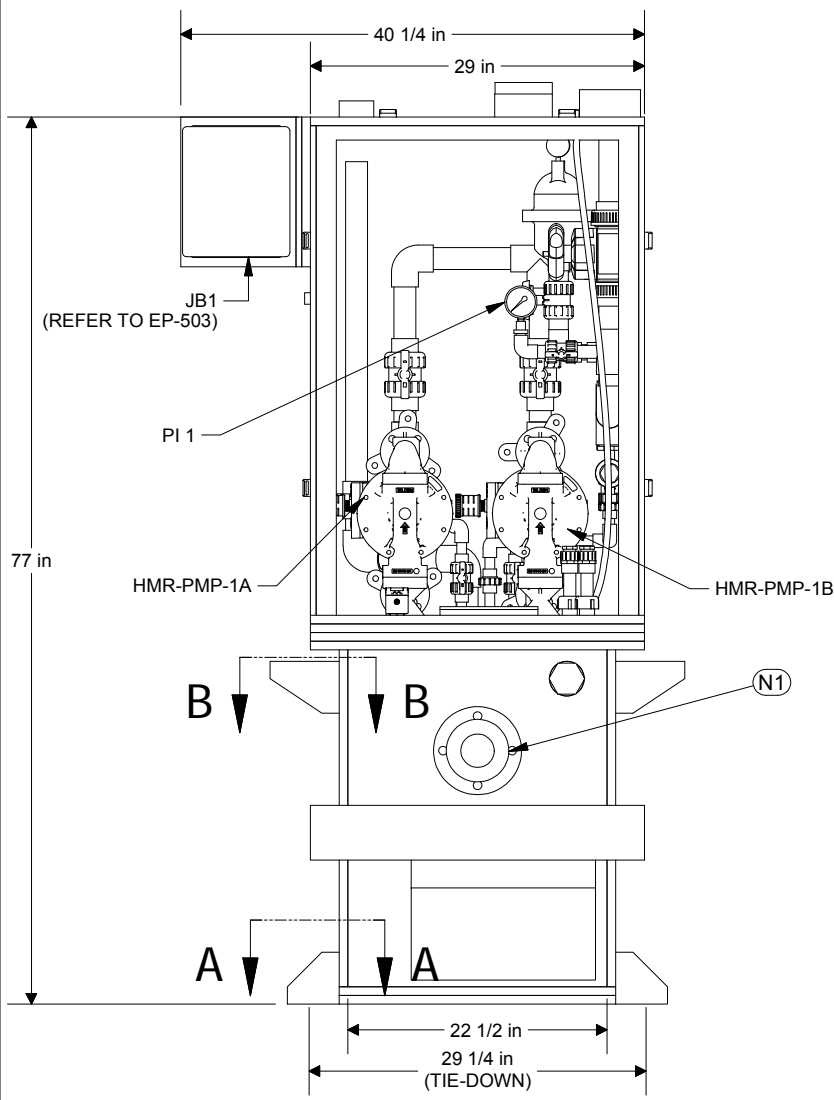
**PLAN VIEW**



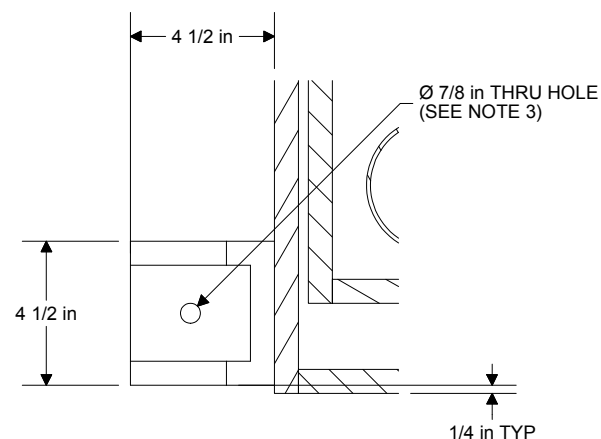
**SECTION B-B  
(INVERTED TIE-DOWN)**



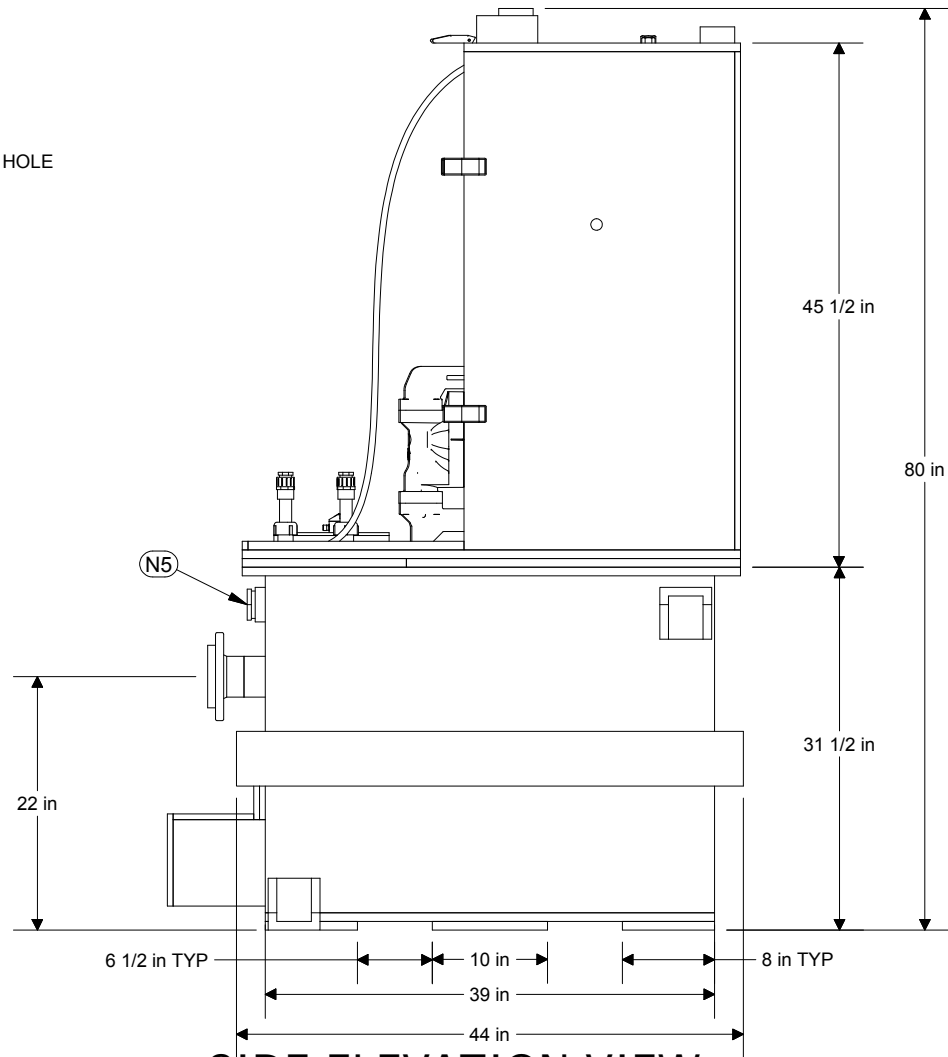
**ISOMETRIC VIEW**



**ELEVATION VIEW**



**SECTION A-A  
(TIE-DOWN)**



**SIDE ELEVATION VIEW**

| NOZZLE SCHEDULE |             |     |                        |
|-----------------|-------------|-----|------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                |
| N1              | 3" FLANGE   | 1   | INLET                  |
| N2              | 1-1/2" FNPT | 1   | DISCHARGE              |
| N3              | 4" FNPT     | 1   | DOUBLE CONTAINMENT     |
| N4              | 2" FNPT     | 1   | VENT                   |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW       |
| N6              | 1" FNPT     | 1   | CONTAINMENT TANK DRAIN |
| N7              | 1/2" FNPT   | 1   | CDA TO HMR-PMP-1A      |
| N8              | 1/2" FNPT   | 1   | CDA TO HMR-PMP-1B      |
| N9              | 1/4" FNPT   | 1   | CDA TO PD HMR-TNK-1-1  |

- NOTES:**
- MATERIALS OF CONSTRUCTION:**
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:**
    - DRY WEIGHT: 510 LB
    - OPERATING WEIGHT: 1110 LB
    - MAXIMUM WEIGHT: 1250 LBS
  - PRIMARY TANK VOLUME: 80 GAL  
CONTAINMENT TANK VOLUME: 110 GAL

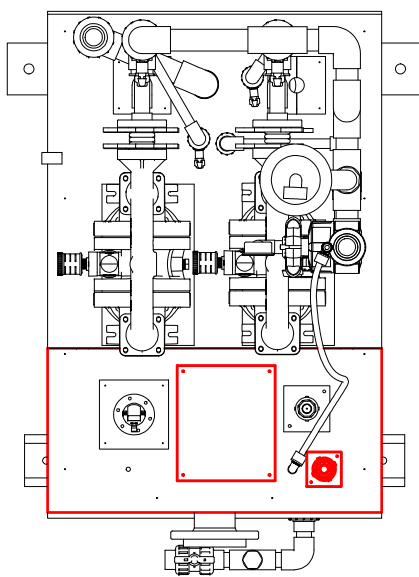
| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 4/15/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

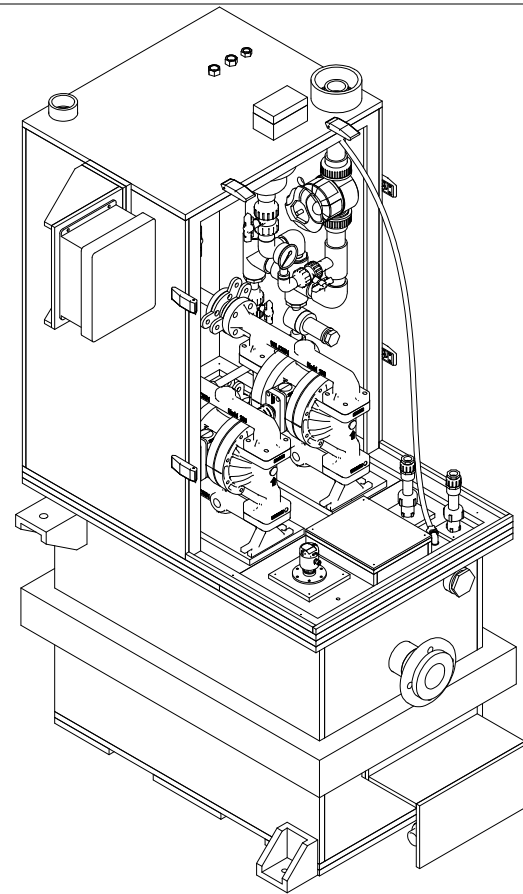
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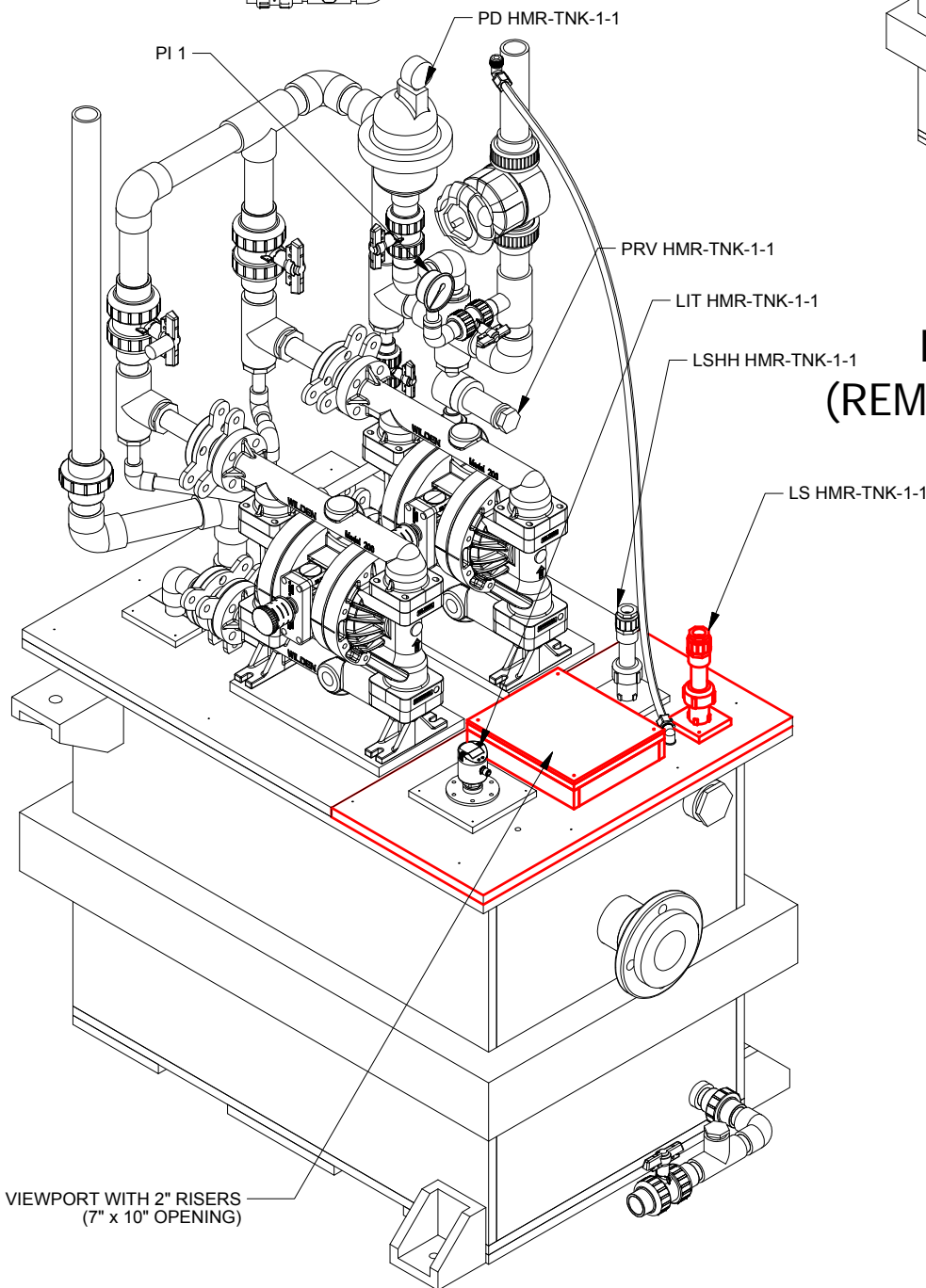
|                                                                                               |                            |               |
|-----------------------------------------------------------------------------------------------|----------------------------|---------------|
| TITLE: ARIA<br>HEAVY METAL RINSE PUMP LIFT STATION (HMR-LS)<br>MECHANICAL GENERAL ARRANGEMENT |                            | REVISION<br>3 |
| SIZE<br>B                                                                                     | DWG. NO.<br>141-190-MG-501 |               |
| SCALE: NTS                                                                                    | SHEET: 1 OF 3              |               |



PLAN VIEW

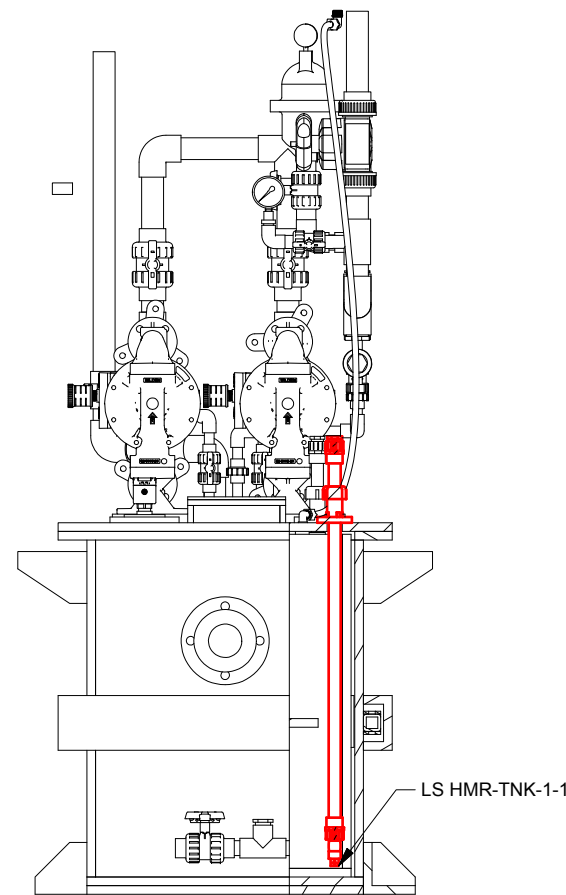


FRONT ISOMETRIC VIEW  
(REMOVABLE ENCLOSURE DETAIL)

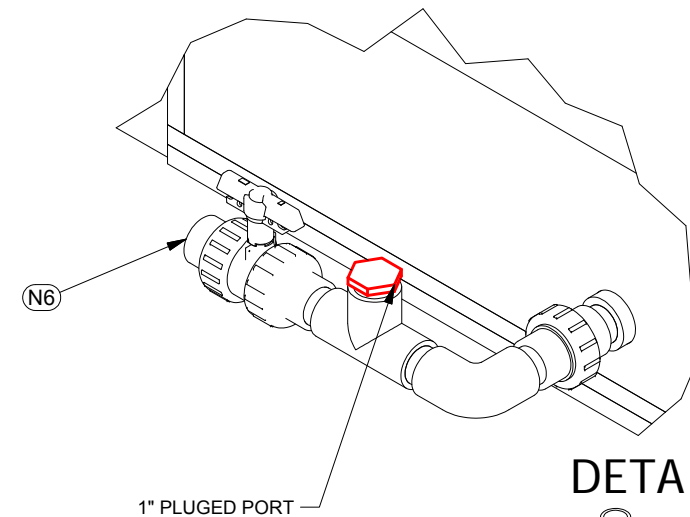


VIEWPORT WITH 2" RISERS  
(7" x 10" OPENING)

FRONT ISOMETRIC VIEW

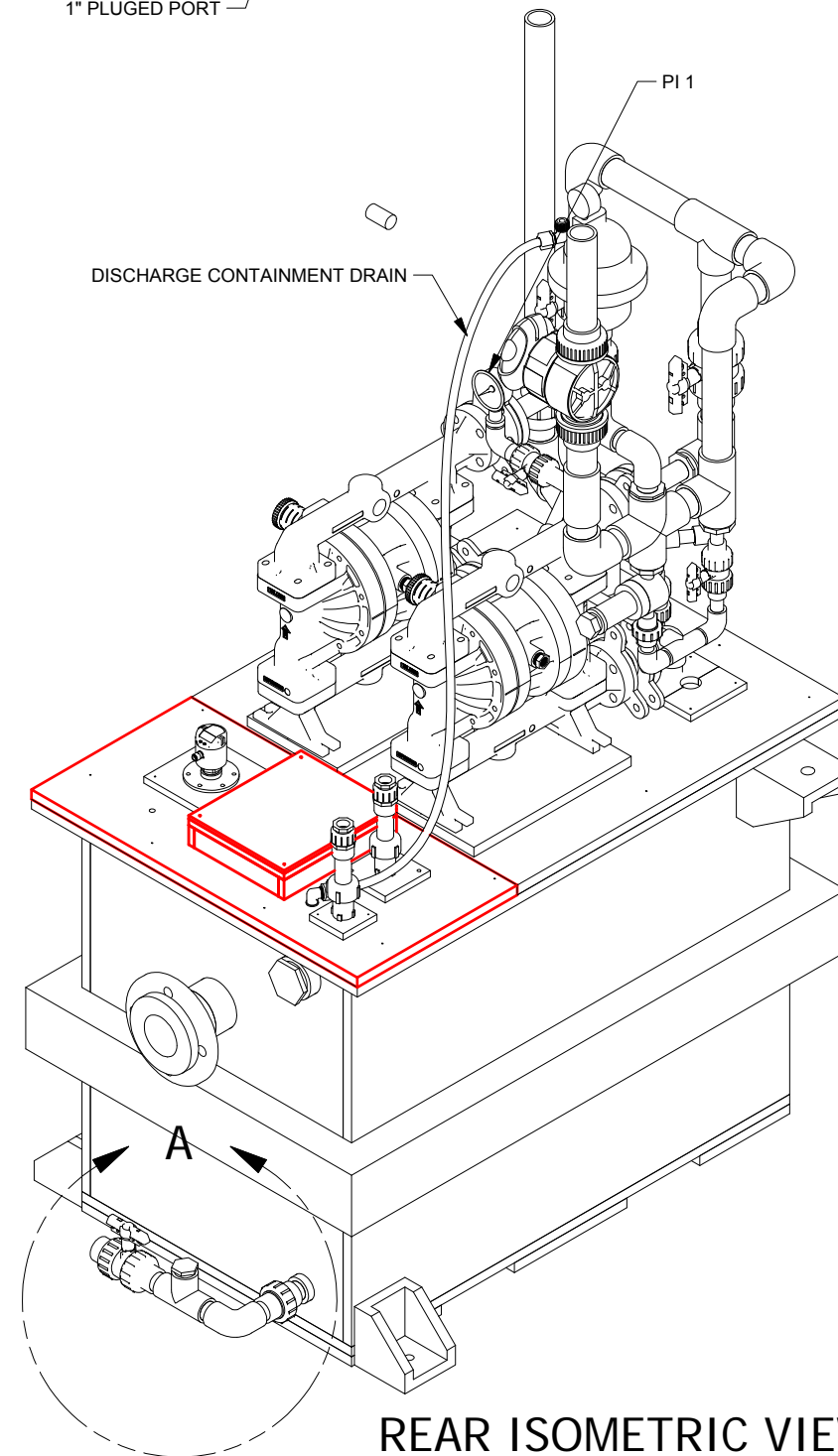


ELEVATION VIEW



1" PLUGGED PORT

DETAIL A



DISCHARGE CONTAINMENT DRAIN

REAR ISOMETRIC VIEW

| NOZZLE SCHEDULE |             |     |                        |
|-----------------|-------------|-----|------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                |
| N1              | 3" FLANGE   | 1   | INLET                  |
| N2              | 1-1/2" FNPT | 1   | DISCHARGE              |
| N3              | 4" FNPT     | 1   | DOUBLE CONTAINMENT     |
| N4              | 2" FNPT     | 1   | VENT                   |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW       |
| N6              | 1" FNPT     | 1   | CONTAINMENT TANK DRAIN |
| N7              | 1/2" FNPT   | 1   | CDA TO HMR-PMP-1A      |
| N8              | 1/2" FNPT   | 1   | CDA TO HMR-PMP-1B      |
| N9              | 1/4" FNPT   | 1   | CDA TO PD HMR-TNK-1-1  |

NOTES:

- MATERIALS OF CONSTRUCTION:  
A) TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.  
B) ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC  
C) ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.  
D) HARDWARE TO BE 18-8 SS.
- ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
- SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED AND INSTALLED BY OTHERS.
- INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
- APPROXIMATE EQUIPMENT WEIGHTS:  
A) DRY WEIGHT: 510 LB  
B) OPERATING WEIGHT: 1110 LB  
C) MAXIMUM WEIGHT: 1250 LBS
- PRIMARY TANK VOLUME: 80 GAL  
CONTAINMENT TANK VOLUME: 110 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 6/08/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

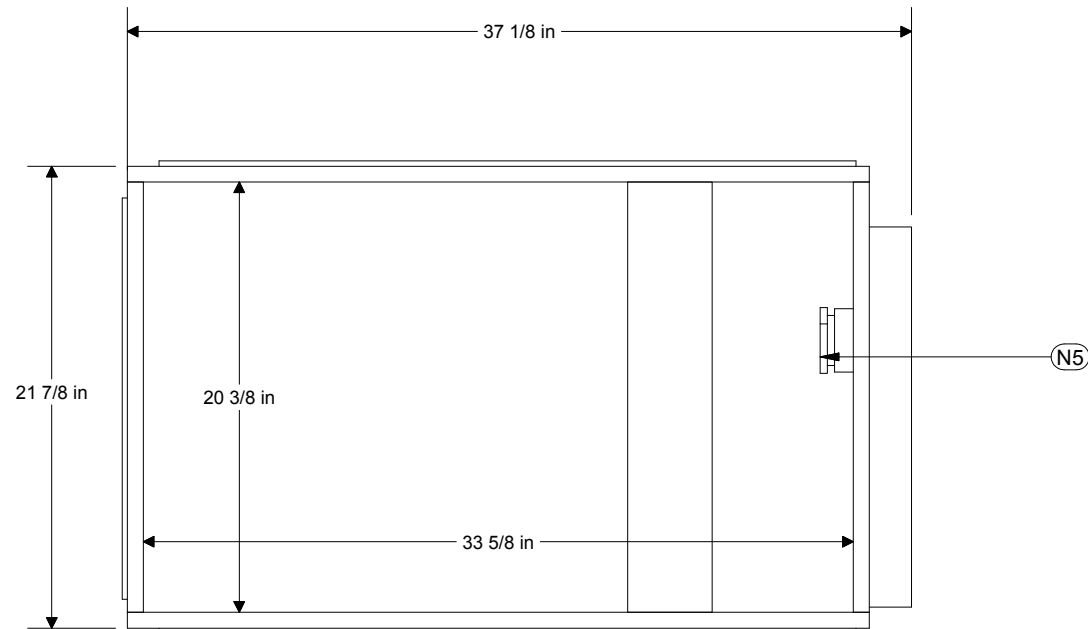
| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | JB |            |
| ENGINEERING MANAGER: | SS |            |

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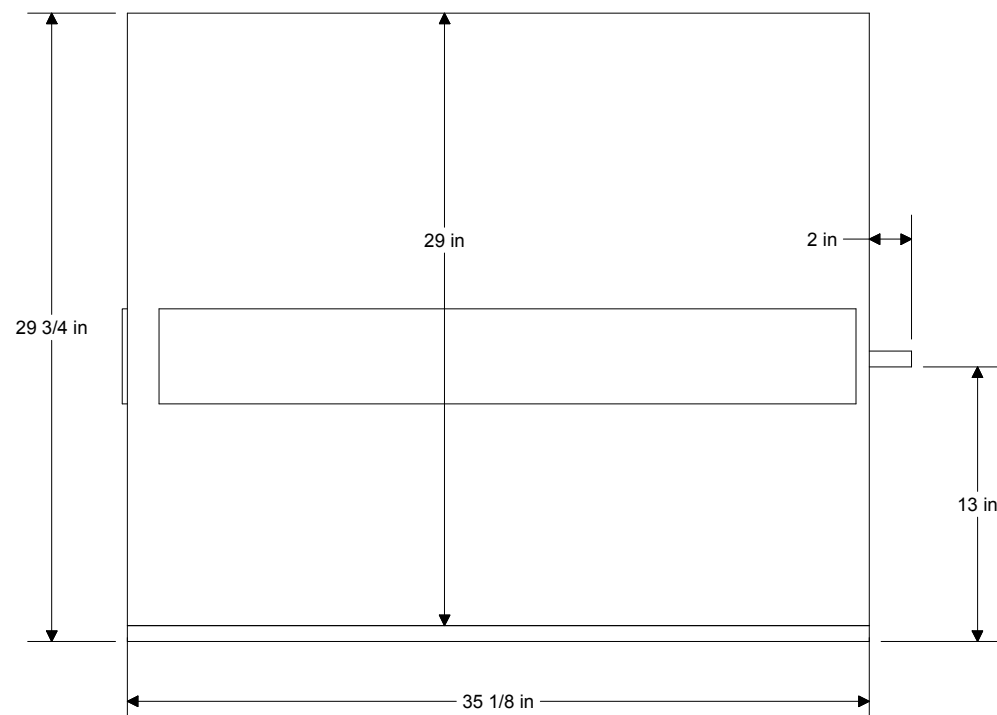


|                                              |                        |          |
|----------------------------------------------|------------------------|----------|
| TITLE: ARIA                                  |                        | REVISION |
| HEAVY METAL RINSE PUMP LIFT STATION (HMR-LS) |                        | 3        |
| MECHANICAL GENERAL ARRANGEMENT               |                        |          |
| SIZE B                                       | DWG. NO. 141190-MG-502 |          |
| SCALE: NTS                                   | SHEET: 2 OF 3          |          |

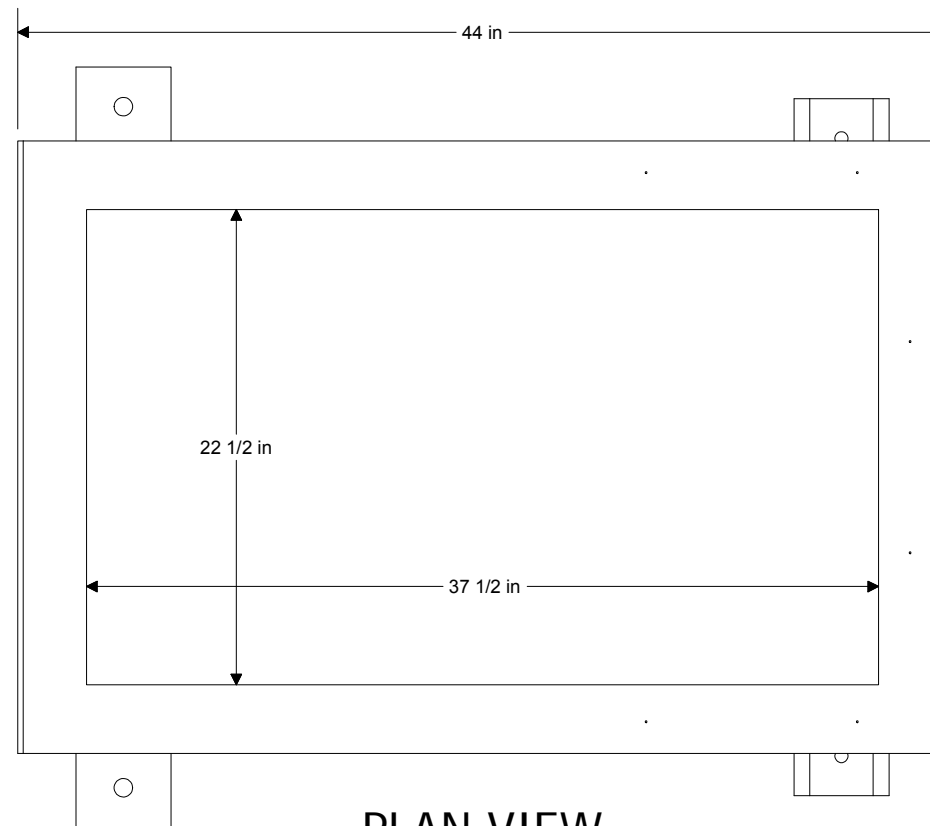


PLAN VIEW

**PRIMARY TANK**  
VOLUME: 80 GAL

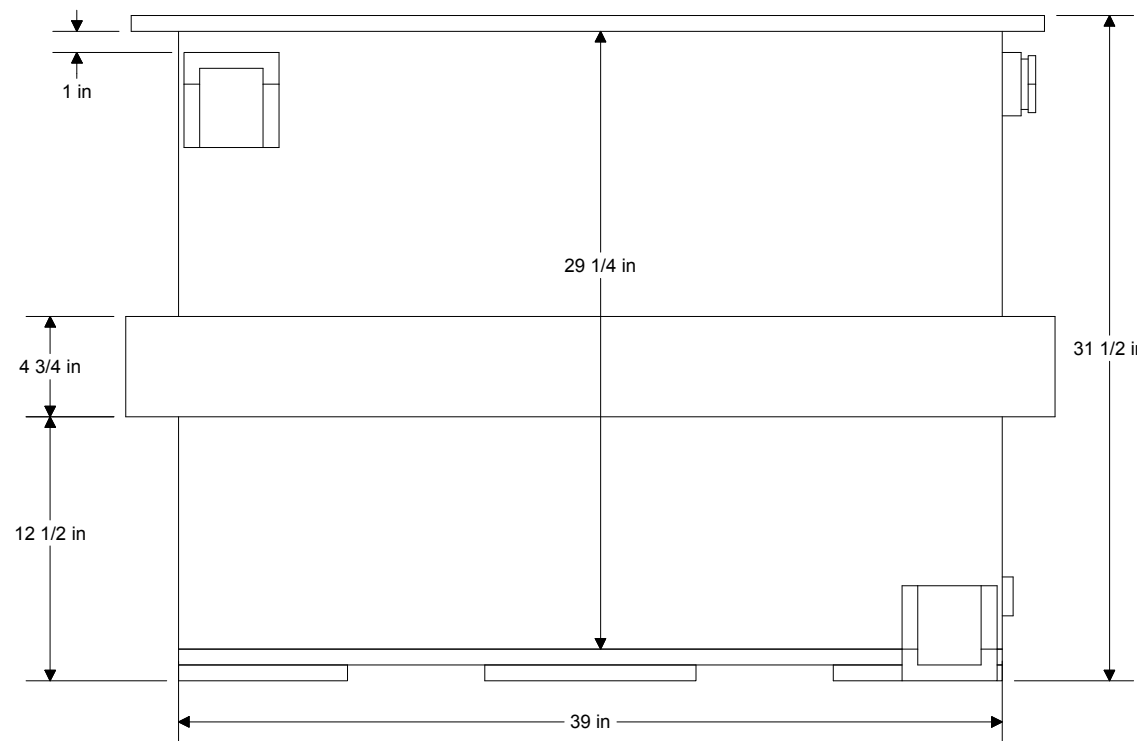


ELEVATION VIEW



PLAN VIEW

**CONTAINMENT TANK**  
VOLUME: 110 GAL



ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                        |
|-----------------|-------------|-----|------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                |
| N1              | 3" FLANGE   | 1   | INLET                  |
| N2              | 1-1/2" FNPT | 1   | DISCHARGE              |
| N3              | 4" FNPT     | 1   | DOUBLE CONTAINMENT     |
| N4              | 2" FNPT     | 1   | VENT                   |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW       |
| N6              | 1" FNPT     | 1   | CONTAINMENT TANK DRAIN |
| N7              | 1/2" FNPT   | 1   | CDA TO HMR-PMP-1A      |
| N8              | 1/2" FNPT   | 1   | CDA TO HMR-PMP-1B      |
| N9              | 1/4" FNPT   | 1   | CDA TO PD HMR-TNK-1-1  |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 510 LB
    - OPERATING WEIGHT: 1110 LB
    - MAXIMUM WEIGHT: 1250 LBS
  - PRIMARY TANK VOLUME: 80 GAL  
CONTAINMENT TANK VOLUME: 110 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 4/15/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

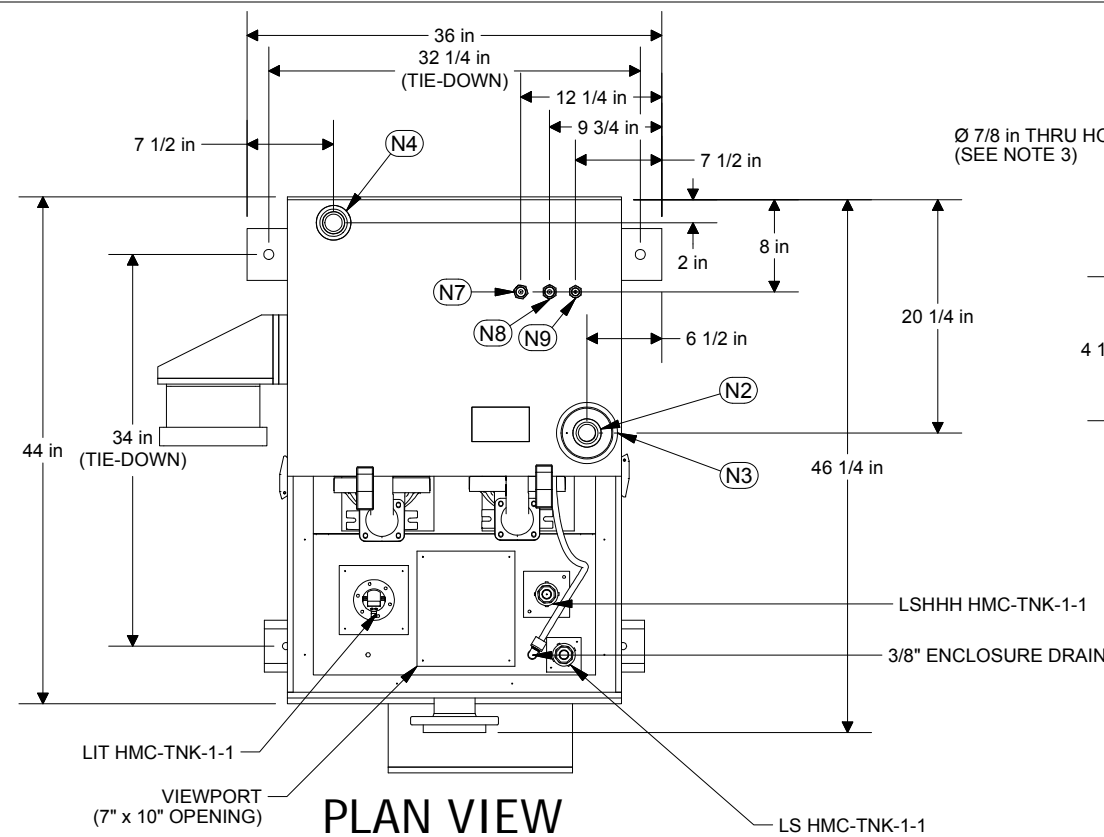
| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | JB |            |
| ENGINEERING MANAGER: | SS |            |

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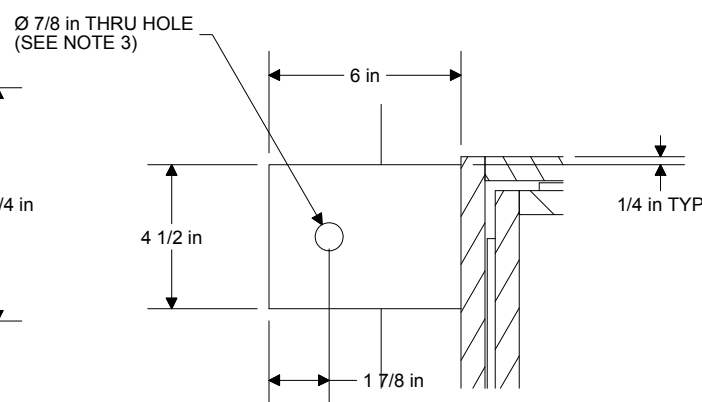


|                                              |                        |
|----------------------------------------------|------------------------|
| TITLE: ARIA                                  | REVISION               |
| HEAVY METAL RINSE PUMP LIFT STATION (HMR-LS) | 3                      |
| MECHANICAL GENERAL ARRANGEMENT               |                        |
| SIZE B                                       | DWG. NO. 141190-MG-503 |
| SCALE: NTS                                   | SHEET: 3 OF 3          |

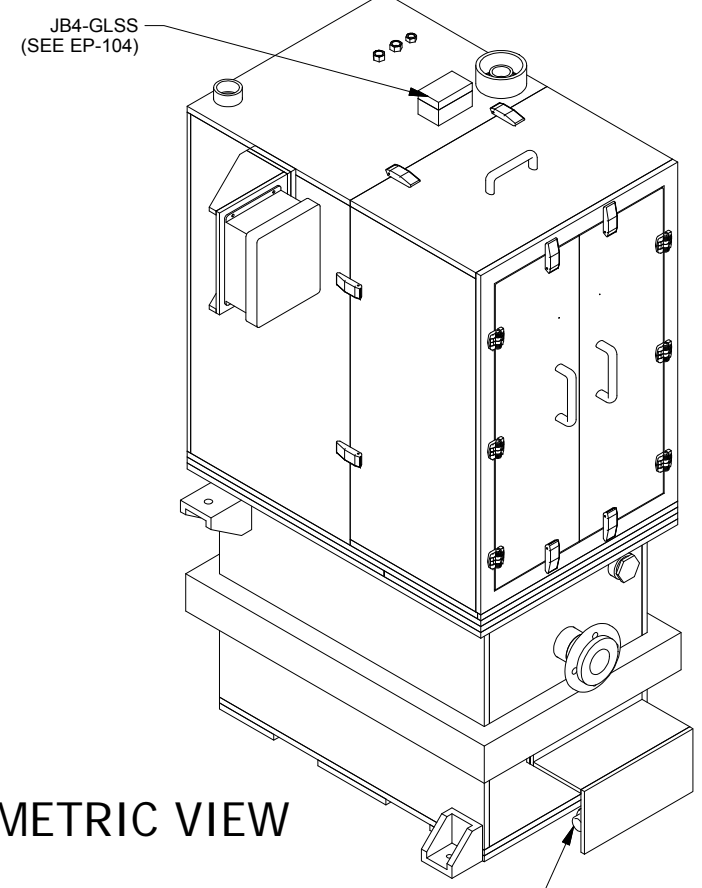




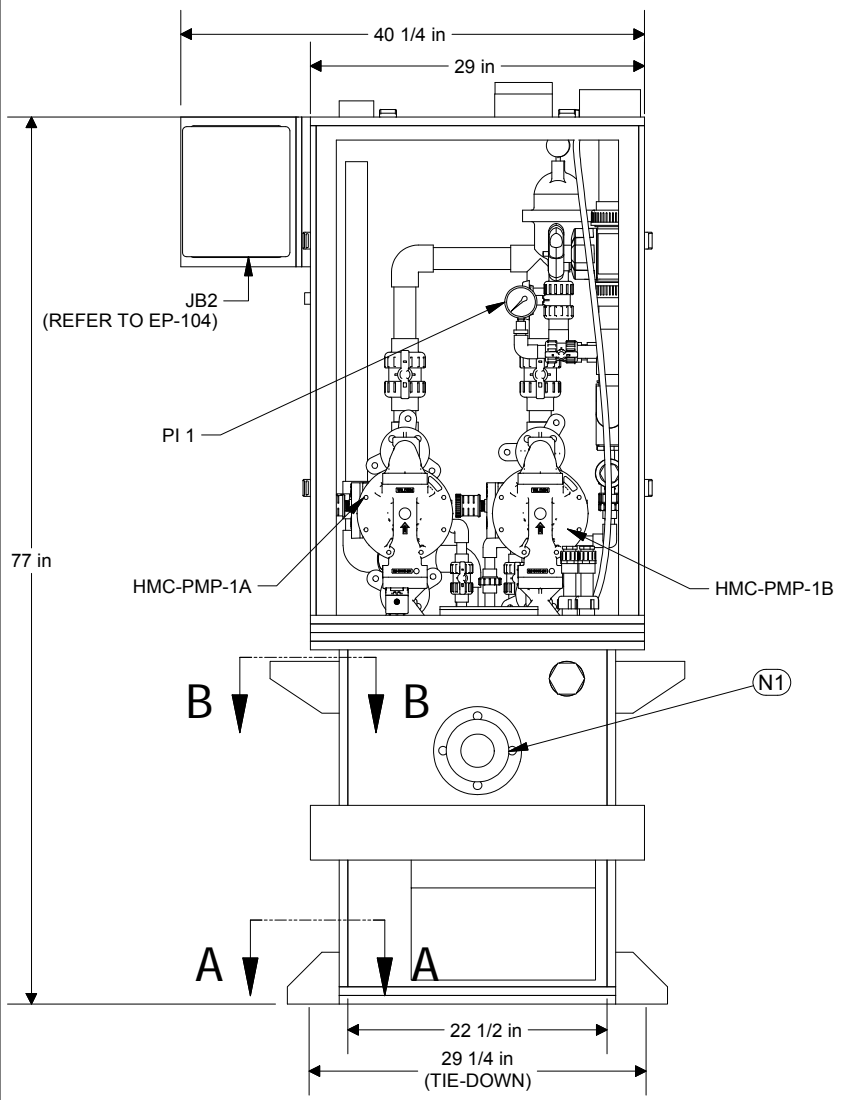
PLAN VIEW



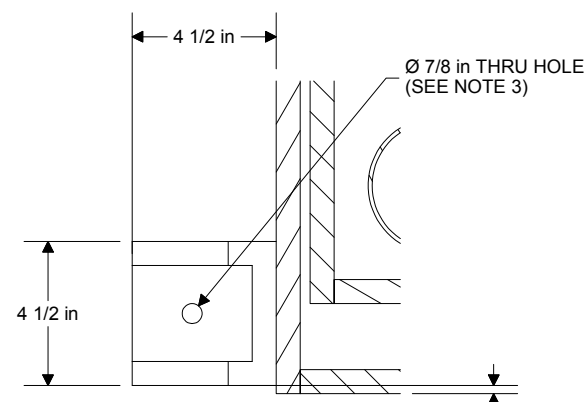
SECTION B-B  
(INVERTED TIE-DOWN)



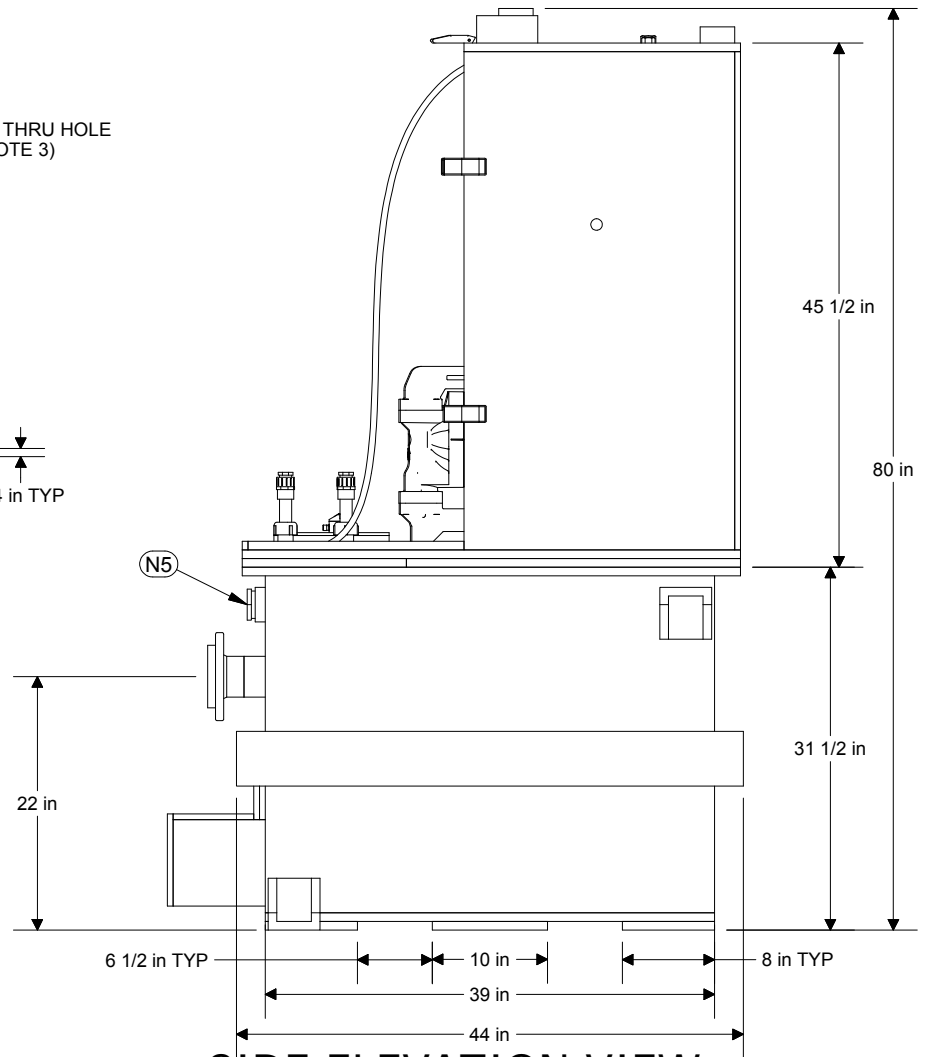
ISOMETRIC VIEW



ELEVATION VIEW



SECTION A-A  
(TIE-DOWN)



SIDE ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                        |
|-----------------|-------------|-----|------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                |
| N1              | 3" FLANGE   | 1   | INLET                  |
| N2              | 1-1/2" FNPT | 1   | DISCHARGE              |
| N3              | 4" FNPT     | 1   | DOUBLE CONTAINMENT     |
| N4              | 2" FNPT     | 1   | VENT                   |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW       |
| N6              | 1" FNPT     | 1   | CONTAINMENT TANK DRAIN |
| N7              | 1/2" FNPT   | 1   | CDA TO HMC-PMP-1A      |
| N8              | 1/2" FNPT   | 1   | CDA TO HMC-PMP-1B      |
| N9              | 1/4" FNPT   | 1   | CDA TO PD HMC-TNK-1-1  |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - A) TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - B) ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC
    - C) ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - D) HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - A) DRY WEIGHT: 510 LB
    - B) OPERATING WEIGHT: 1110 LB
    - C) MAXIMUM WEIGHT: 1250 LBS
  - PRIMARY TANK VOLUME: 80 GAL  
CONTAINMENT TANK VOLUME: 110 GAL

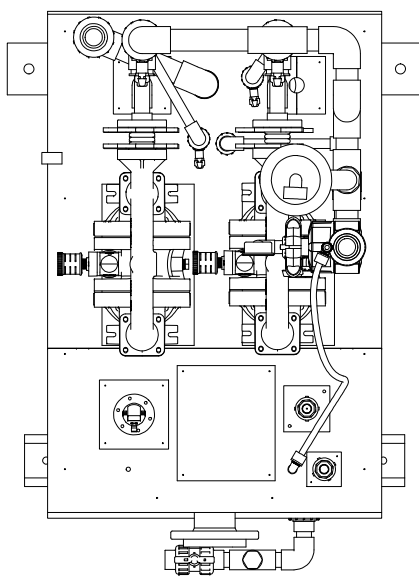
| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 6/08/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

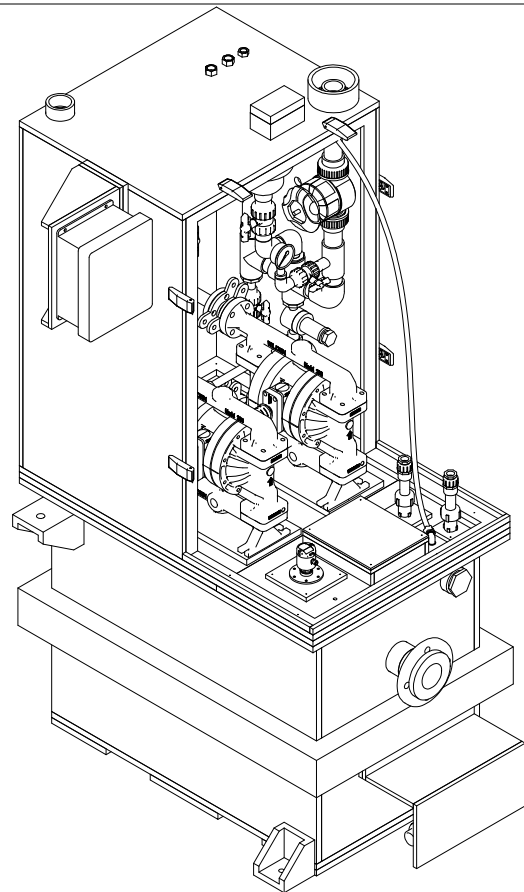
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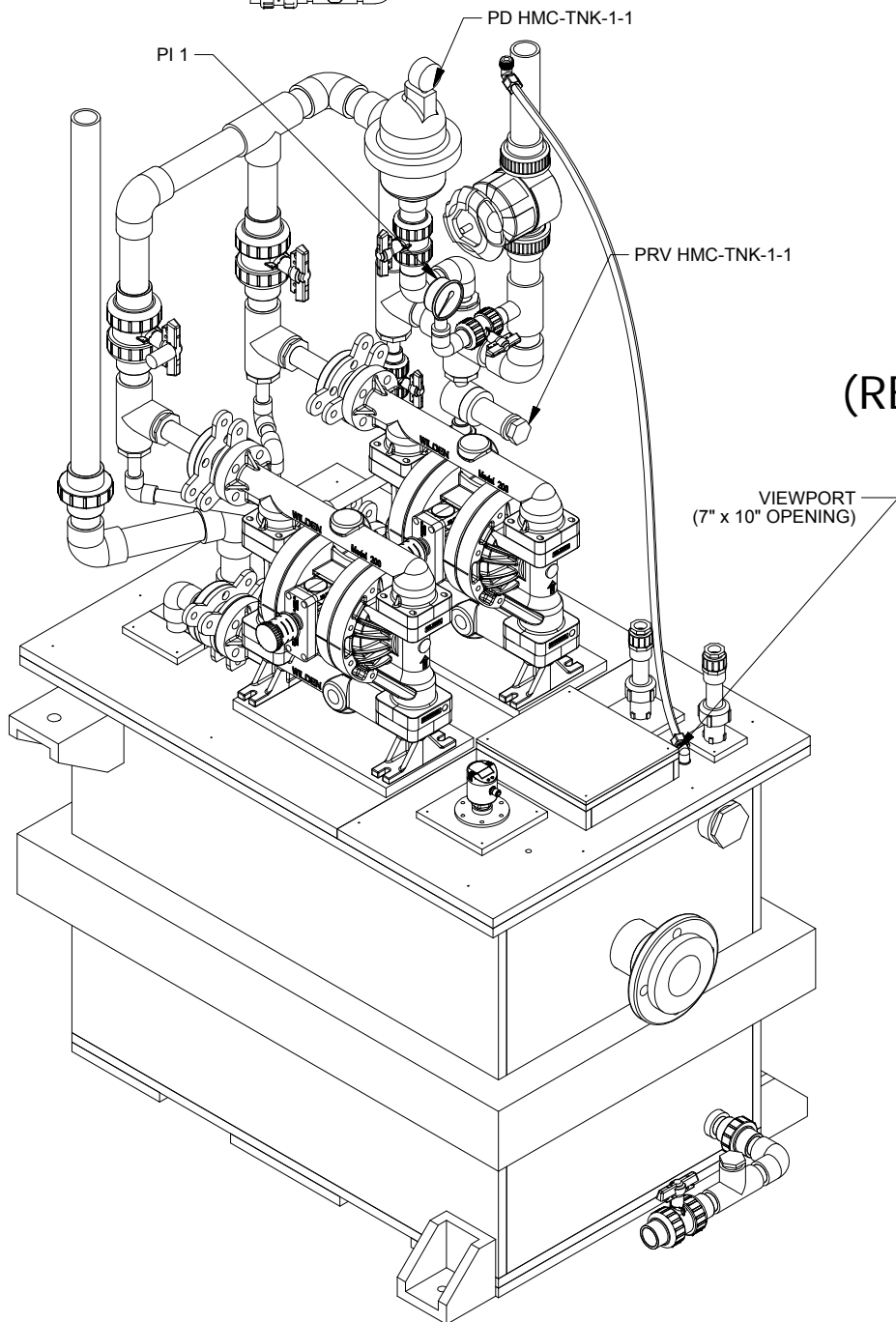
|                                                                                      |                            |
|--------------------------------------------------------------------------------------|----------------------------|
| TITLE: ARIA<br>CONCENTRATED METAL PUMP LS (HMC-LS)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>3              |
| SIZE<br>B                                                                            | DWG. NO.<br>141-193-MG-111 |
| SCALE: NTS                                                                           | SHEET: 1 OF 3              |



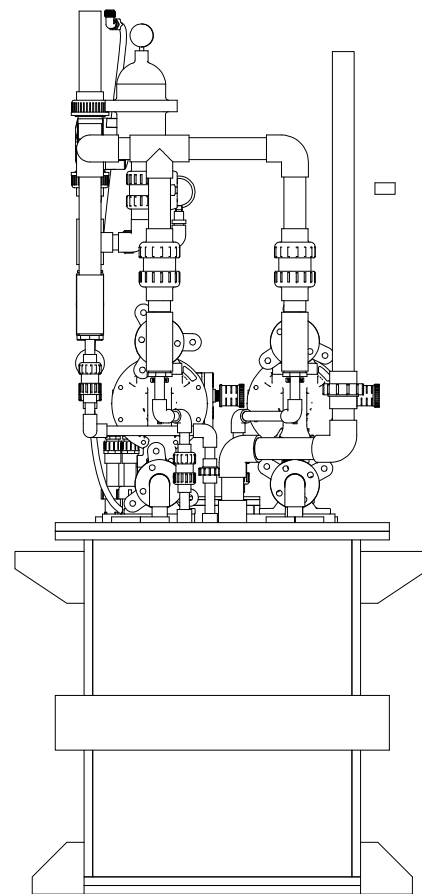
PLAN VIEW



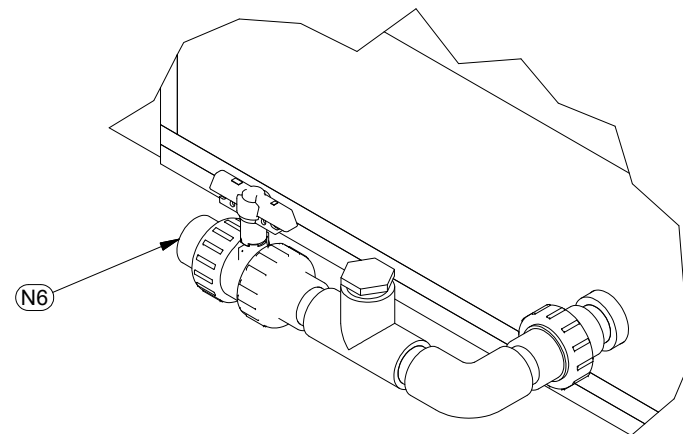
FRONT ISOMETRIC VIEW  
(REMOVABLE ENCLOSURE DETAIL)



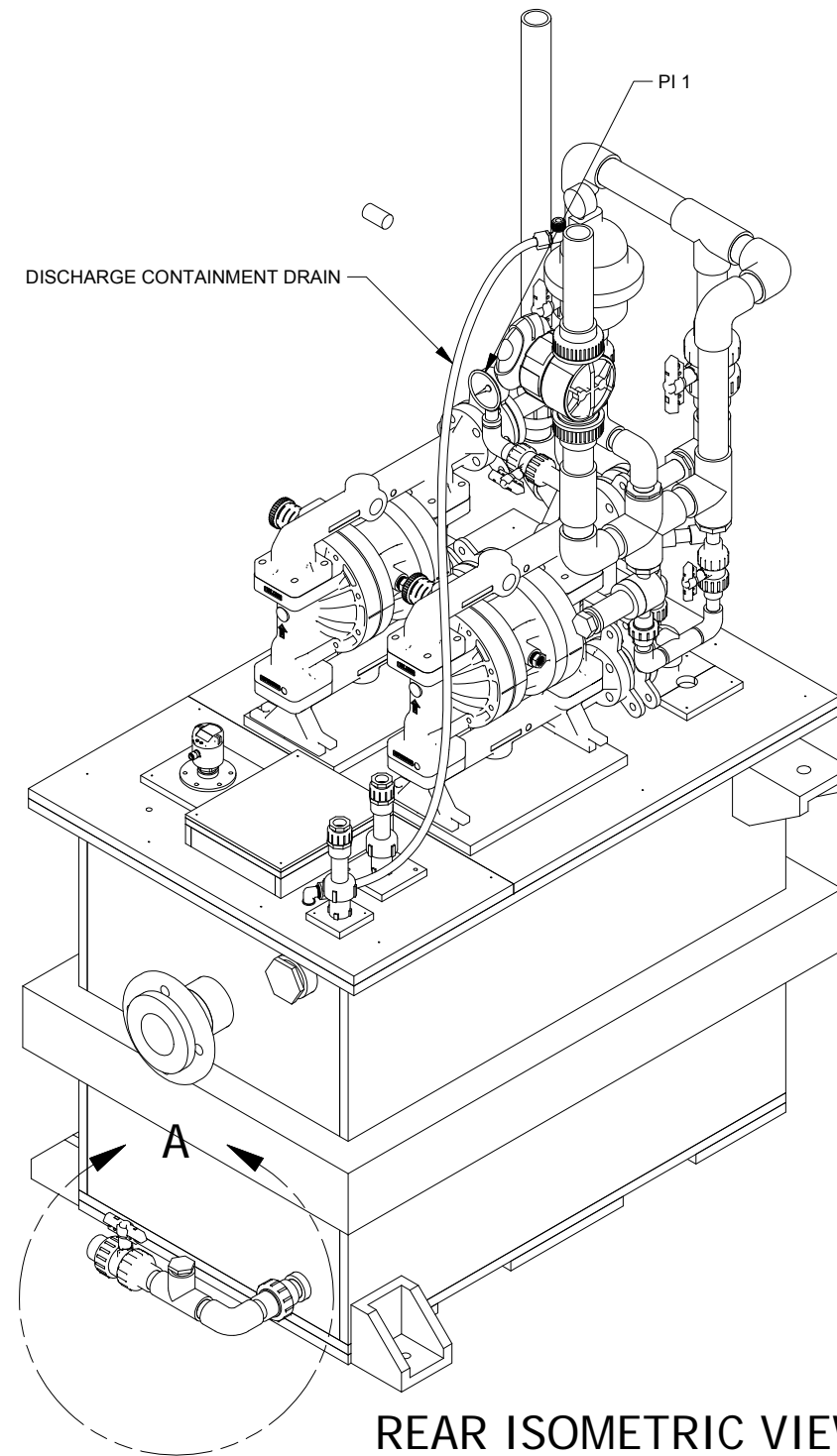
FRONT ISOMETRIC VIEW



ELEVATION VIEW



DETAIL A



REAR ISOMETRIC VIEW

| NOZZLE SCHEDULE |             |     |                        |
|-----------------|-------------|-----|------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                |
| N1              | 3" FLANGE   | 1   | INLET                  |
| N2              | 1-1/2" FNPT | 1   | DISCHARGE              |
| N3              | 4" FNPT     | 1   | DOUBLE CONTAINMENT     |
| N4              | 2" FNPT     | 1   | VENT                   |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW       |
| N6              | 1" FNPT     | 1   | CONTAINMENT TANK DRAIN |
| N7              | 1/2" FNPT   | 1   | CDA TO HMC-PMP-1A      |
| N8              | 1/2" FNPT   | 1   | CDA TO HMC-PMP-1B      |
| N9              | 1/4" FNPT   | 1   | CDA TO PD HMC-TNK-1-1  |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - A) TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - B) ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC
    - C) ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - D) HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - A) DRY WEIGHT: 510 LB
    - B) OPERATING WEIGHT: 1110 LB
    - C) MAXIMUM WEIGHT: 1250 LBS
  - PRIMARY TANK VOLUME: 80 GAL  
CONTAINMENT TANK VOLUME: 110 GAL

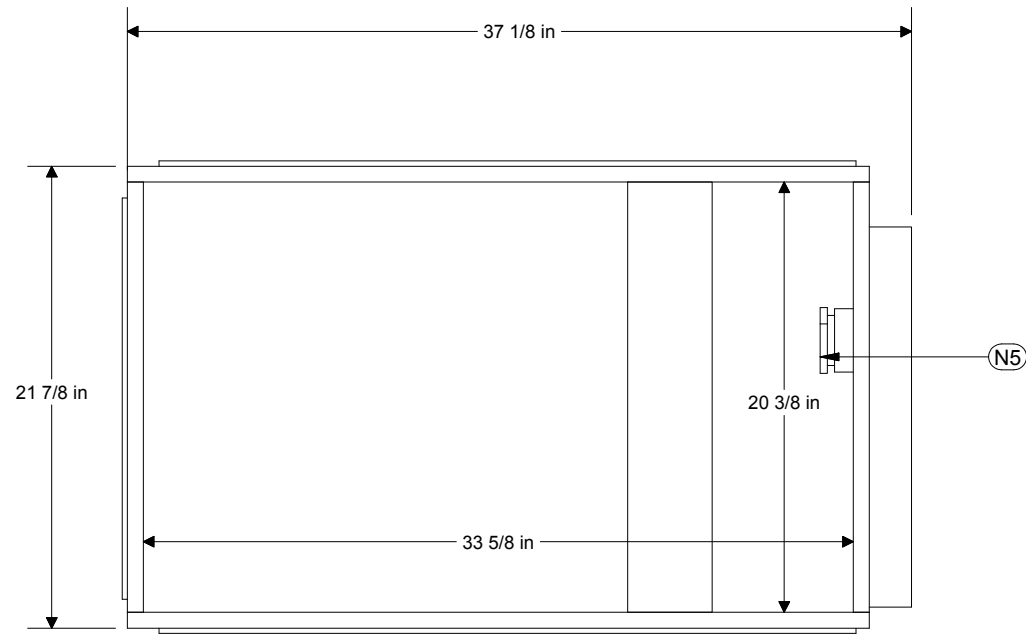
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|------|------------|-----|--------------------------|
| 3    | 6/08/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

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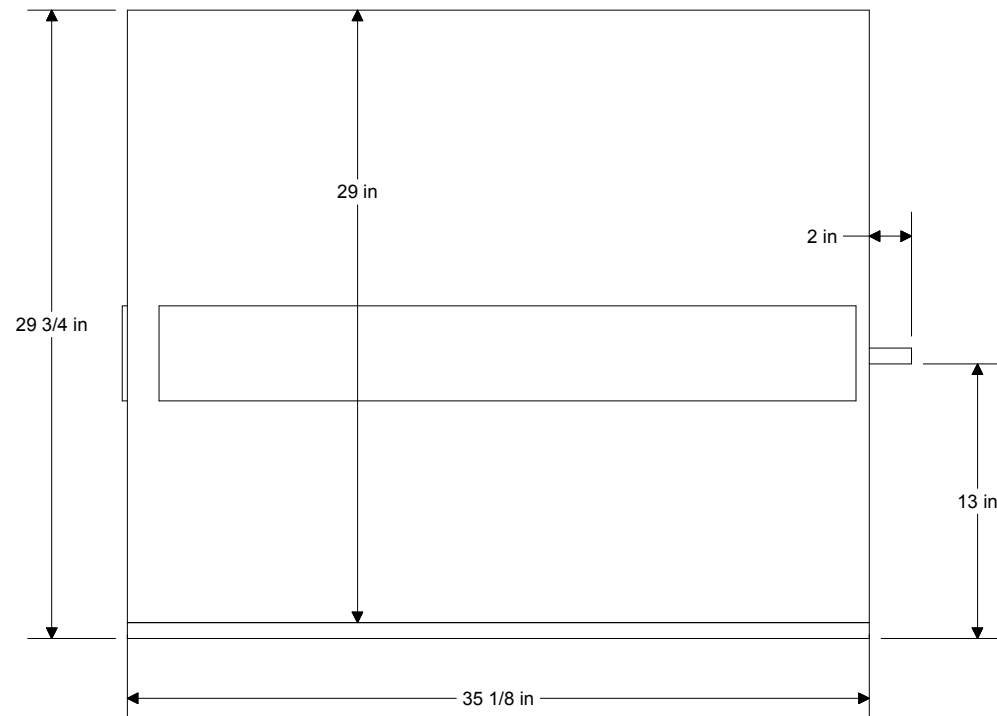


|                                           |                        |               |
|-------------------------------------------|------------------------|---------------|
| TITLE: ARIA                               |                        | REVISION      |
| CONCENTRATED HEAVY METAL PUMP LS (HMC-LS) |                        | 3             |
| MECHANICAL GENERAL ARRANGEMENT            |                        |               |
| SIZE B                                    | DWG. NO. 141193-MG-112 |               |
| SCALE: NTS                                |                        | SHEET: 2 OF 3 |

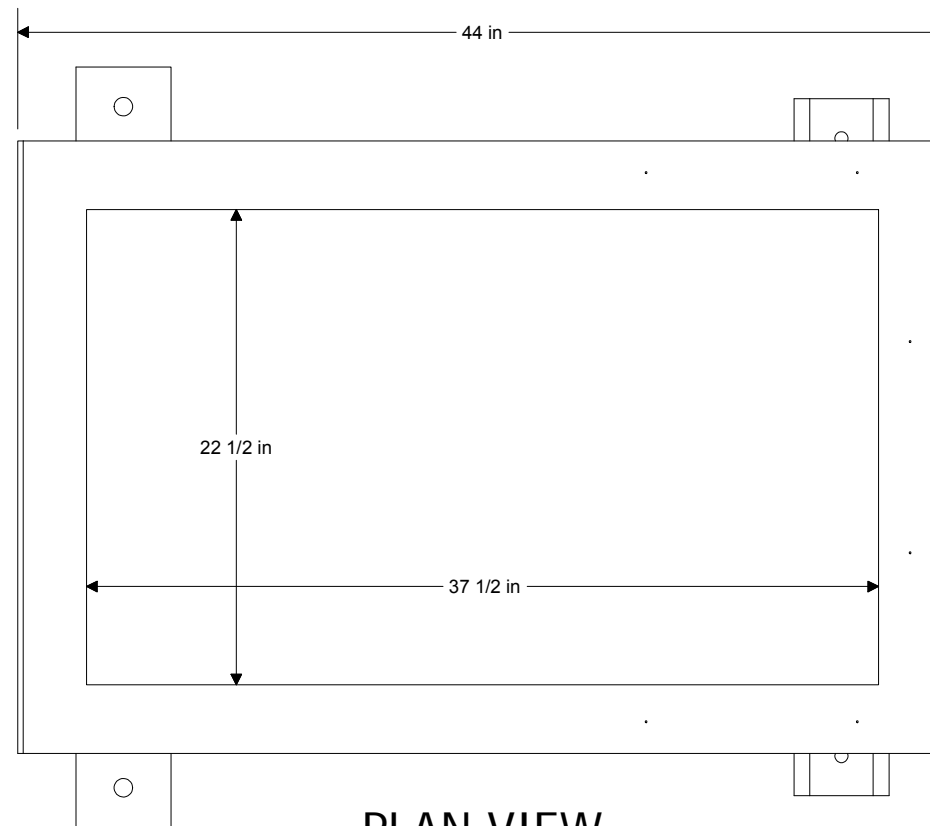


PLAN VIEW

**PRIMARY TANK**  
VOLUME: 80 GAL

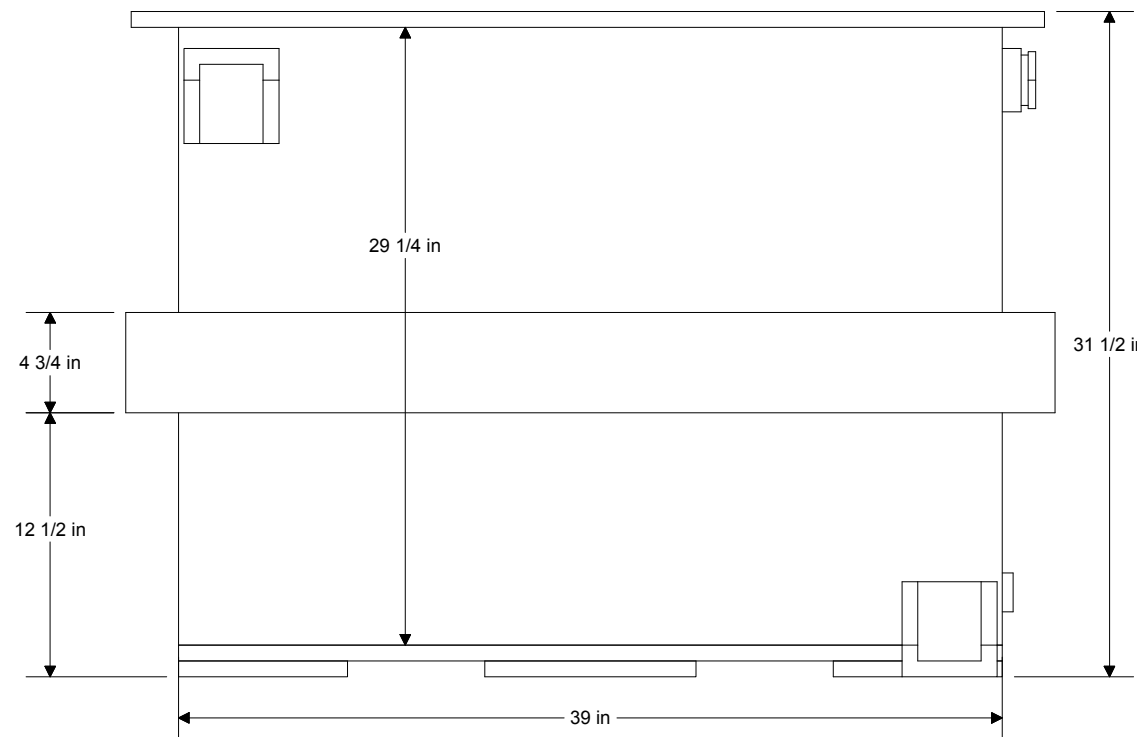


ELEVATION VIEW



PLAN VIEW

**CONTAINMENT TANK**  
VOLUME: 110 GAL



ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                        |
|-----------------|-------------|-----|------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                |
| N1              | 3" FLANGE   | 1   | INLET                  |
| N2              | 1-1/2" FNPT | 1   | DISCHARGE              |
| N3              | 4" FNPT     | 1   | DOUBLE CONTAINMENT     |
| N4              | 2" FNPT     | 1   | VENT                   |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW       |
| N6              | 1" FNPT     | 1   | CONTAINMENT TANK DRAIN |
| N7              | 1/2" FNPT   | 1   | CDA TO HMC-PMP-1A      |
| N8              | 1/2" FNPT   | 1   | CDA TO HMC-PMP-1B      |
| N9              | 1/4" FNPT   | 1   | CDA TO PD HMC-TNK-1-1  |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 510 LB
    - OPERATING WEIGHT: 1110 LB
    - MAXIMUM WEIGHT: 1250 LBS
  - PRIMARY TANK VOLUME: 80 GAL  
CONTAINMENT TANK VOLUME: 110 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 6/08/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

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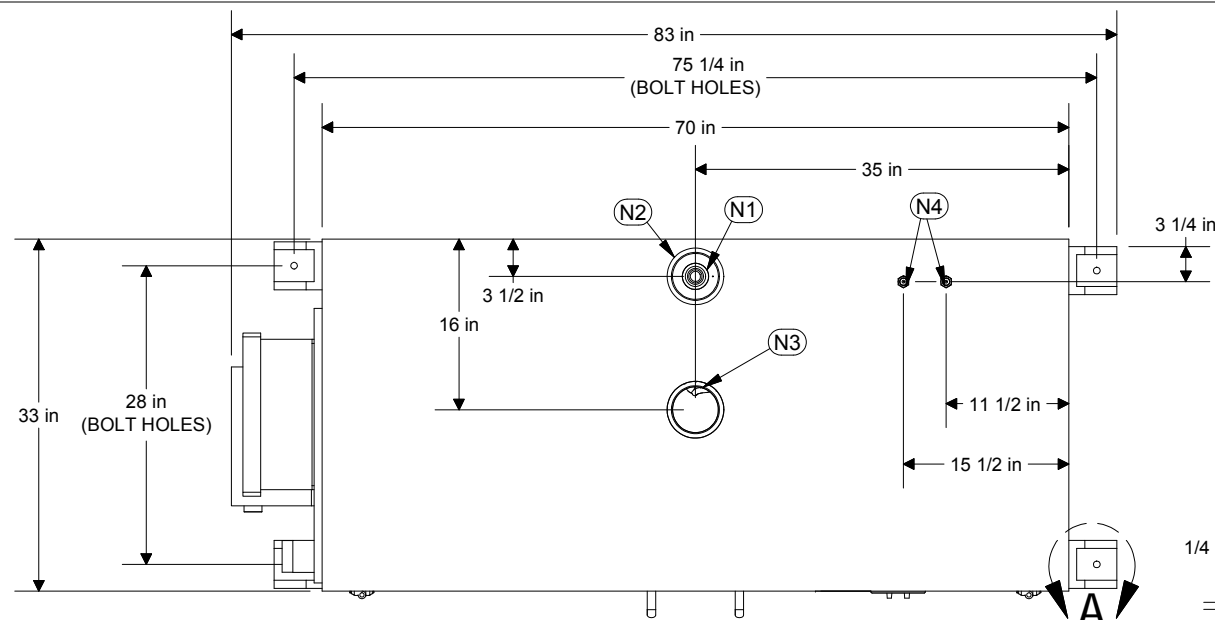


|                                           |          |
|-------------------------------------------|----------|
| TITLE: ARIA                               | REVISION |
| CONCENTRATED HEAVY METAL PUMP LS (HMC-LS) | 3        |
| MECHANICAL GENERAL ARRANGEMENT            |          |

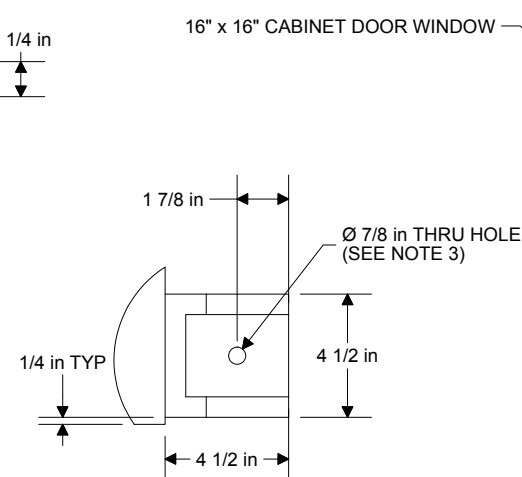
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|--------|------------------------|
| SIZE B | DWG. NO. 141193-MG-113 |
|--------|------------------------|

ATTACHMENT 6

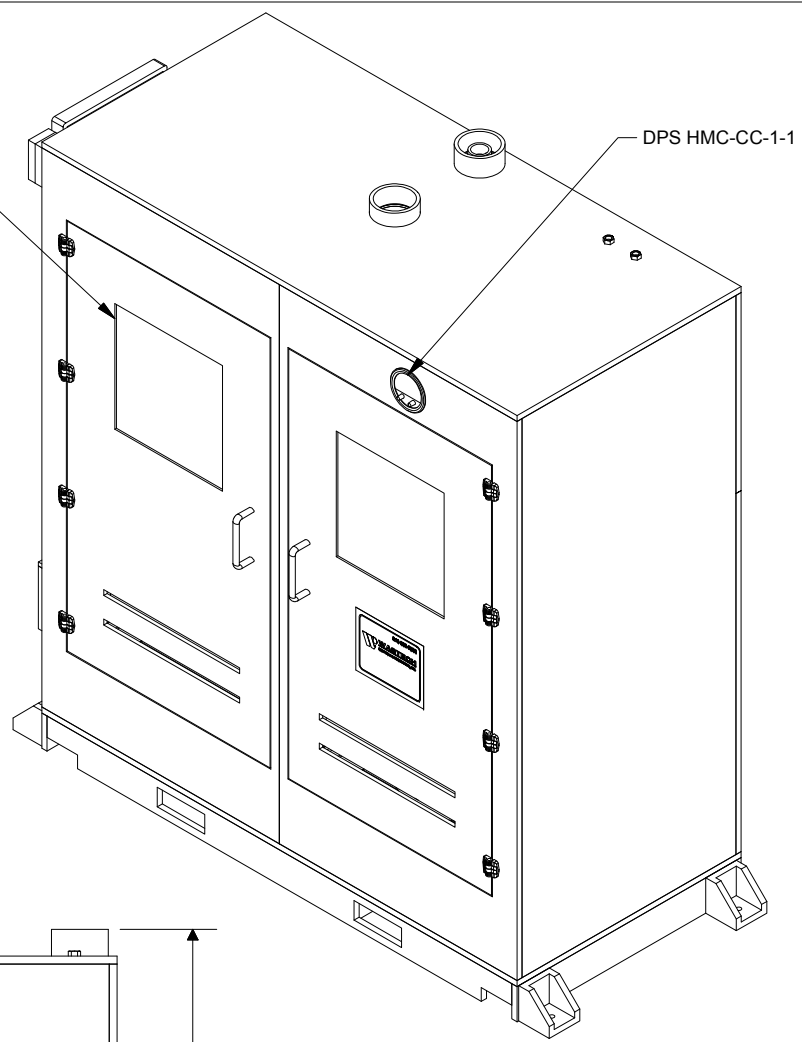
COLLECTION CABINET (HMC-CC) INFORMATION



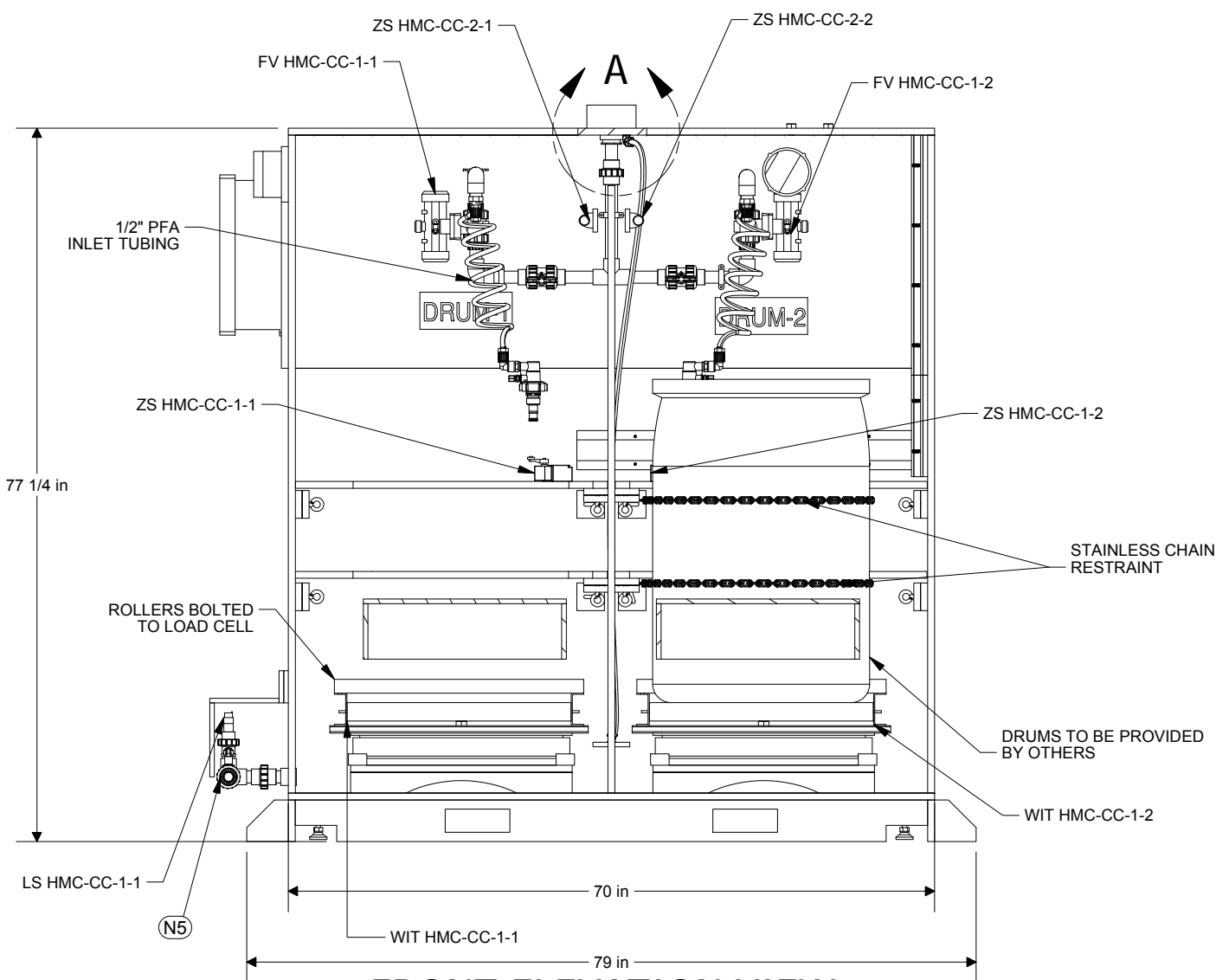
PLAN VIEW



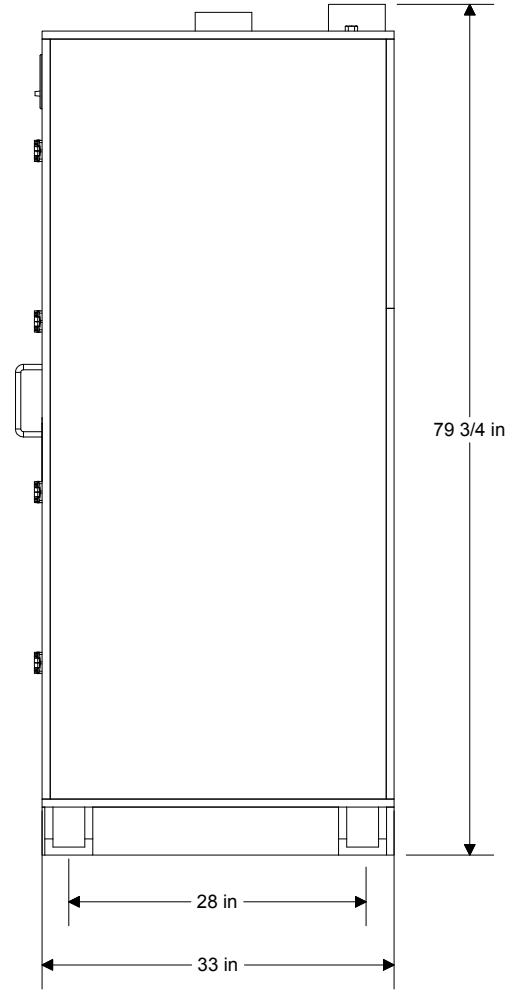
DETAIL A



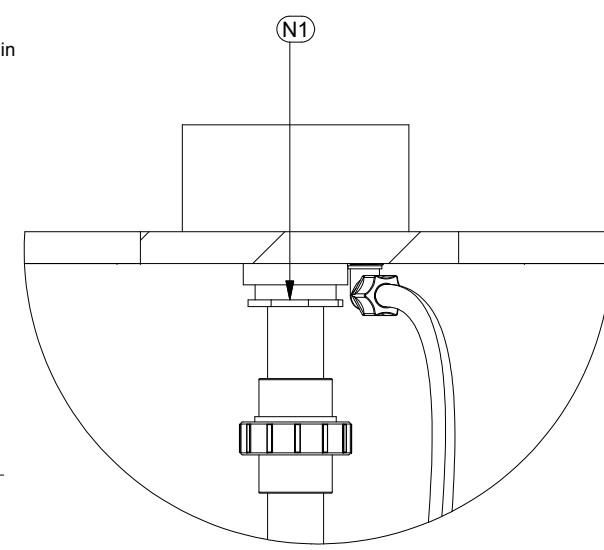
ISOMETRIC VIEW



FRONT ELEVATION VIEW



SIDE ELEVATION VIEW



DETAIL A

| NOZZLE SCHEDULE |             |     |                    |
|-----------------|-------------|-----|--------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE            |
| N1              | 1-1/2" FNPT | 1   | WASTEWATER INLET   |
| N2              | 4" FNPT     | 1   | DOUBLE CONTAINMENT |
| N3              | 4" FNPT     | 1   | CABINET VENT       |
| N4              | 3/8" FNPT   | 2   | CDA INLET          |
| N5              | 1" FNPT     | 1   | DRAIN              |

- NOTES:
- MATERIALS OF CONSTRUCTION
    - A) CABINET TO BE FABRICATED FROM 3/4" WHITE POLYPROPYLENE.
    - B) ROLLERS TO BE FABRICATED FROM STAINLESS STEEL.
    - C) ALL PIPING AND FITTINGS TO BE CPVC EXCEPT WHERE NOTED.
    - D) PNEUMATIC TUBING TO BE POLYURETHANE.
  - CHEMICAL DRUMS TO BE PROVIDED BY OTHERS.
  - ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED AND INSTALLED BY OTHERS.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE CABINET.
  - VOLUME OF DOUBLE CONTAINMENT: 78 GALLONS
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - A) DRY WEIGHT: 790 LBS
    - B) OPERATING WEIGHT: 1670 LBS
    - C) MAXIMUM WEIGHT: 2230 LBS

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 4/30/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

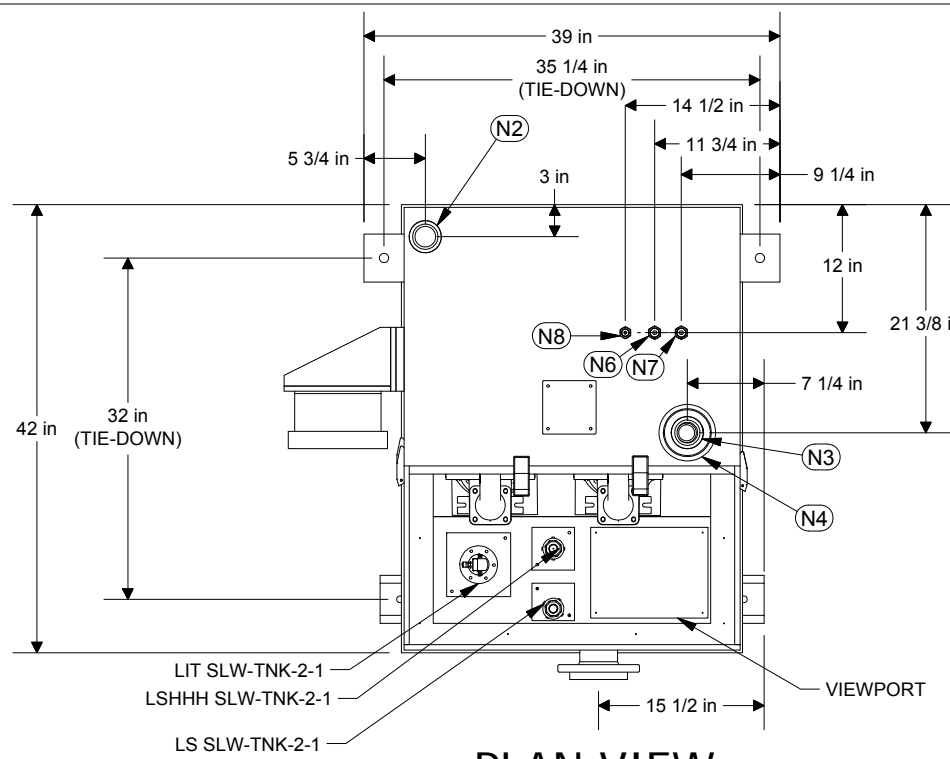
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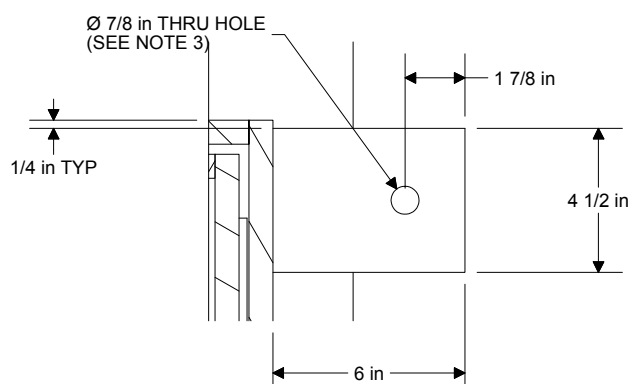
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| TITLE: ARIA<br>CHEMICAL COLLECTION CABINET (HMC-CC-1)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>3 |
|-----------------------------------------------------------------------------------------|---------------|

ATTACHMENT 7

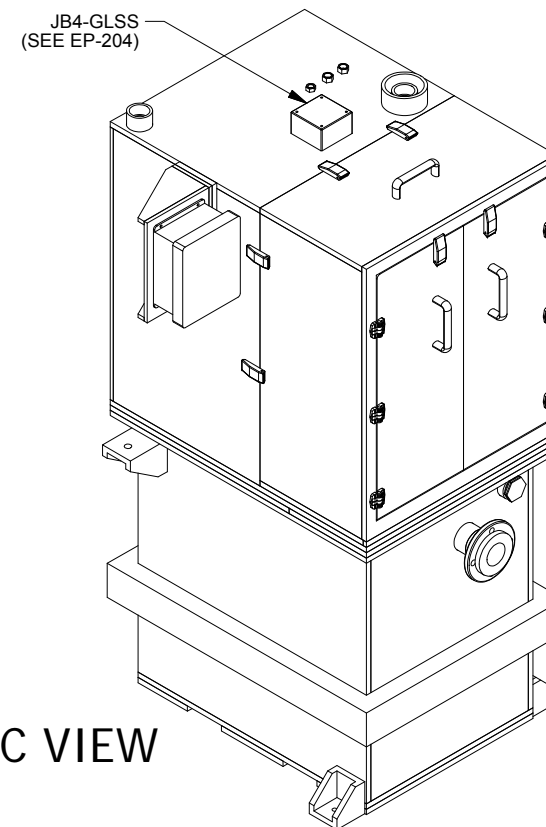
LIFT STATION (SLW-LS2) INFORMATION



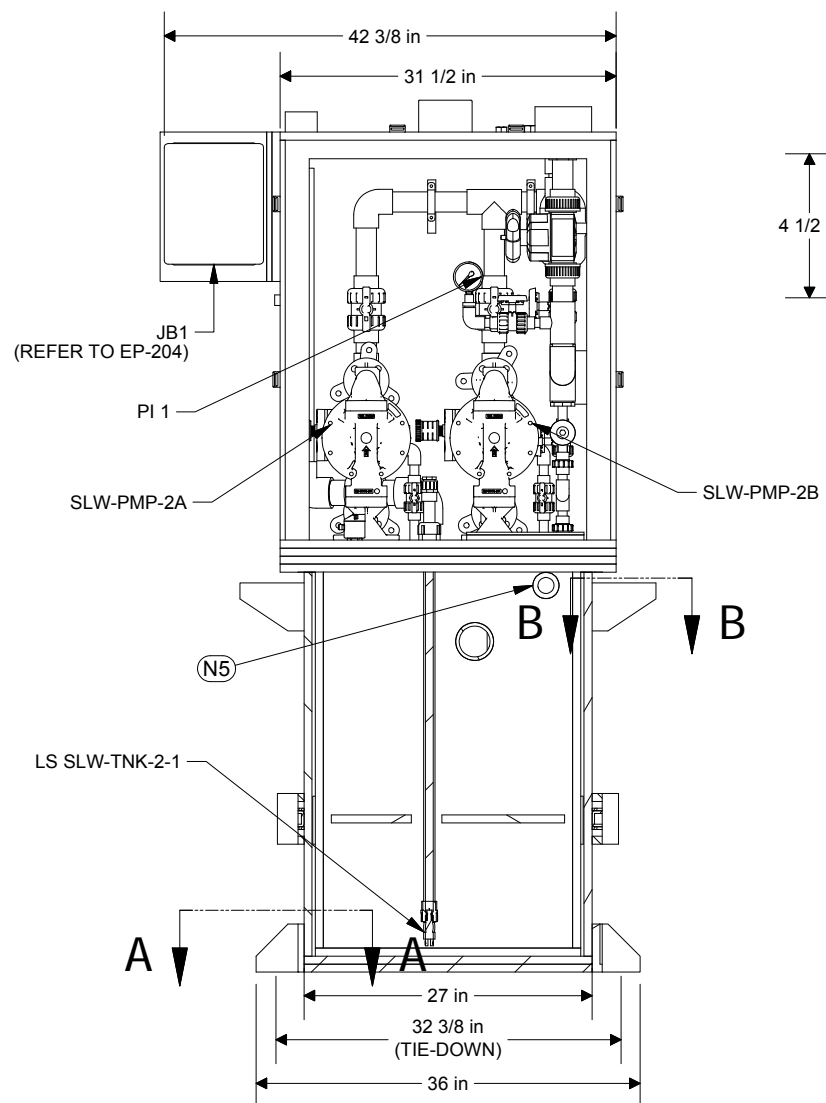
PLAN VIEW



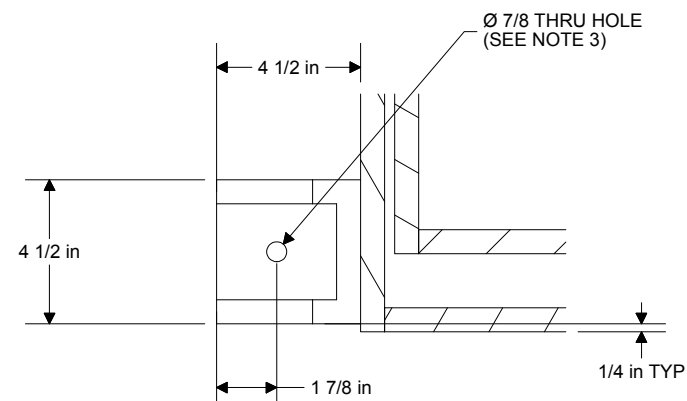
SECTION B-B  
(INVERTED TIE-DOWN)



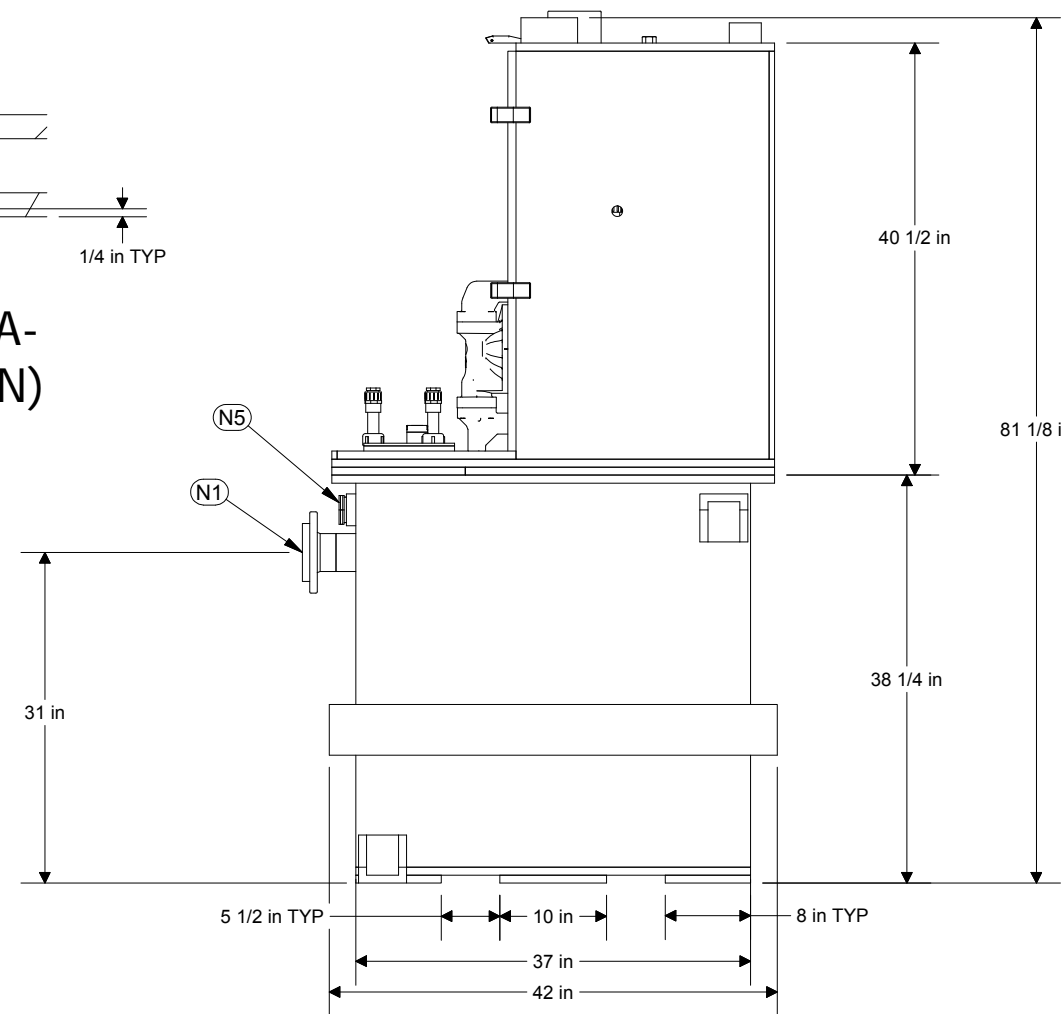
ISOMETRIC VIEW



ELEVATION VIEW



SECTION A-A  
(TIE-DOWN)



SIDE ELEVATION VIEW

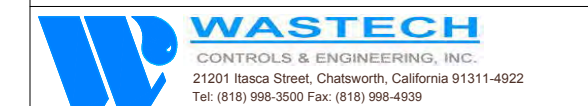
| NOZZLE SCHEDULE |             |     |                       |
|-----------------|-------------|-----|-----------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE               |
| N1              | 3" FLANGE   | 1   | INLET                 |
| N2              | 2" FNPT     | 1   | VENT                  |
| N3              | 2" FNPT     | 1   | PUMPED DISCHARGE      |
| N4              | 4" FNPT     | 1   | DOUBLE CONTAINMENT    |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW      |
| N6              | 1/2" FNPT   | 1   | CDA TO SLW-PMP-2A     |
| N7              | 1/2" FNPT   | 1   | CDA TO SLW-PMP-2B     |
| N8              | 1/4" FNPT   | 1   | CDA TO PD SLW-TNK-2-1 |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC.
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 620 LBS
    - OPERATING WEIGHT: 1700 LBS
    - MAXIMUM WEIGHT: 1885 LBS
  - TANK VOLUME: 142 GAL

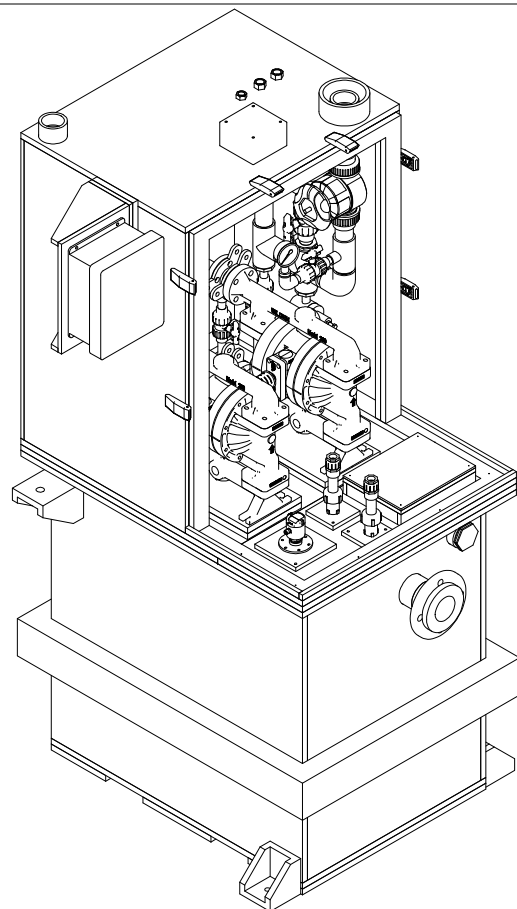
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|------|------------|-----|--------------------------|
| 4    | 7/07/2015  | MM  | REVISED AS BUILT         |
| 3    | 5/02/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 09/09/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

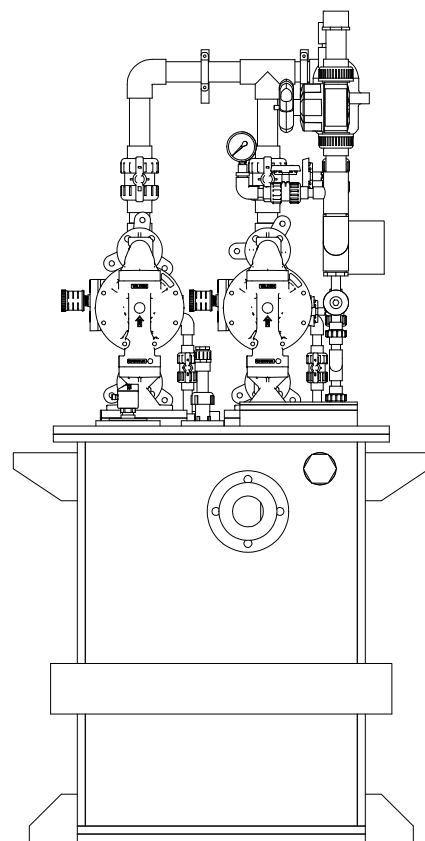
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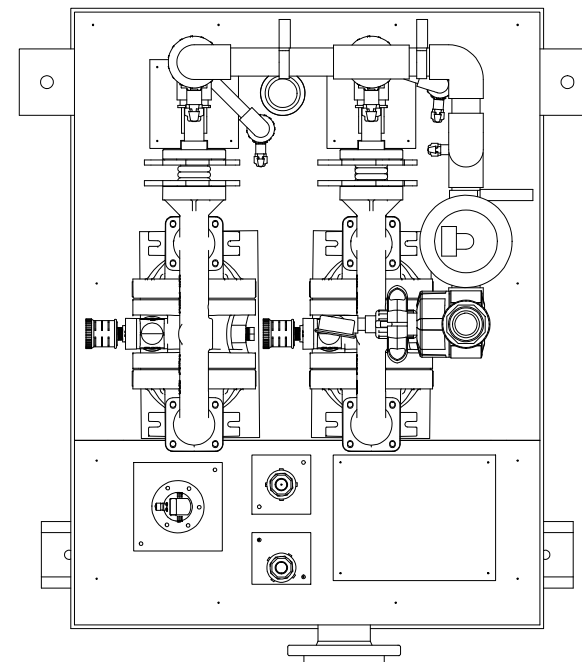
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|--------------------------------------------------------------------------------|---------------|
| TITLE: ARIA GRINDER AREA LIFT STATION (SLW-LS2) MECHANICAL GENERAL ARRANGEMENT | REVISION 4    |
| SIZE B DWG. NO. 141193-MG-211                                                  |               |
| SCALE: NTS                                                                     | SHEET: 1 OF 3 |



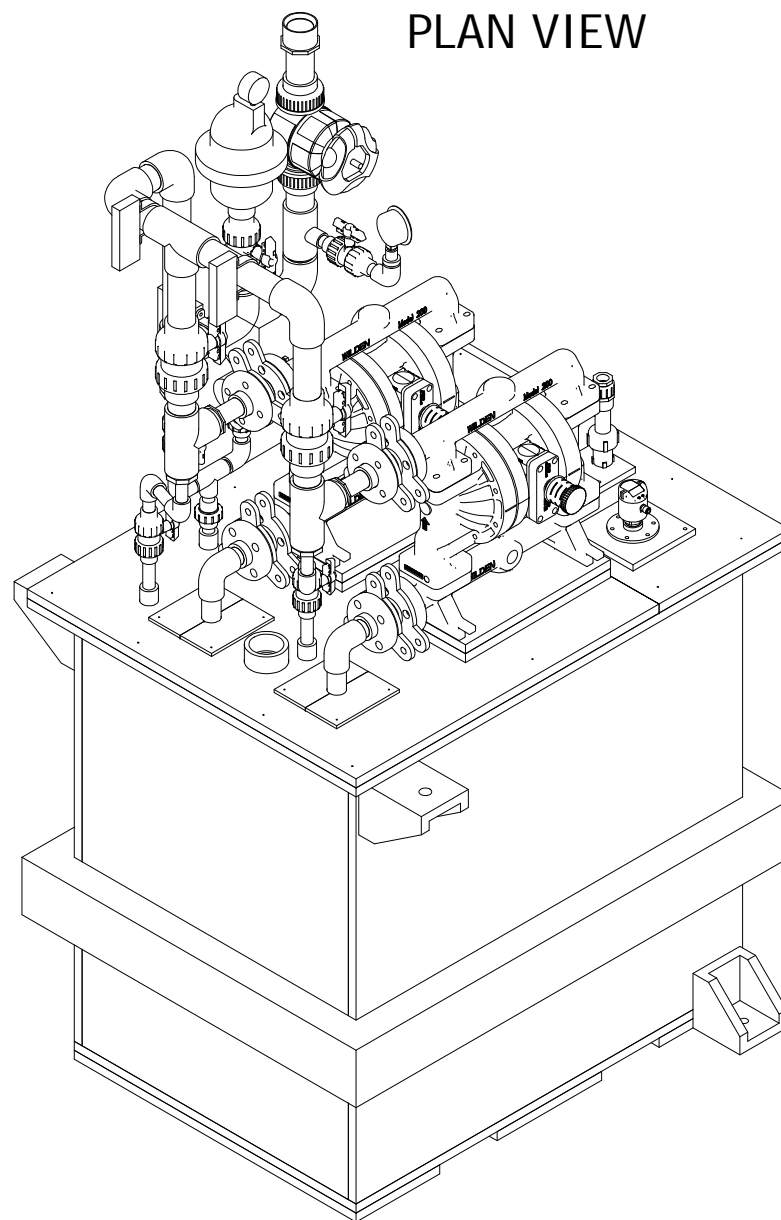
FRONT ISOMETRIC VIEW  
(REMOVABLE ENCLOSURE DETAIL)



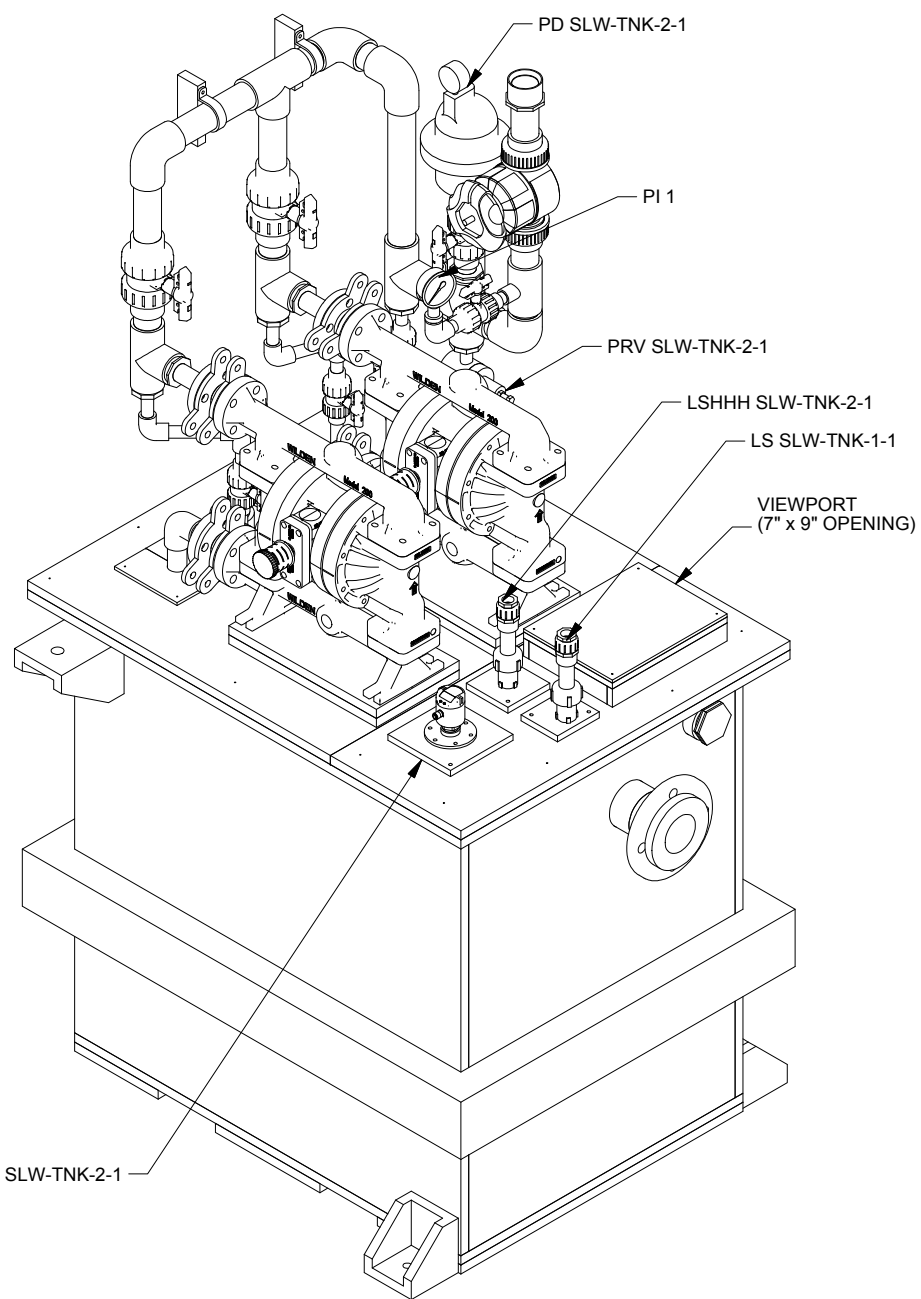
ELEVATION VIEW



PLAN VIEW



REAR ISOMETRIC VIEW



FRONT ISOMETRIC VIEW

| NOZZLE SCHEDULE |             |     |                       |
|-----------------|-------------|-----|-----------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE               |
| N1              | 3" FLANGE   | 1   | INLET                 |
| N2              | 2" FNPT     | 1   | VENT                  |
| N3              | 2" FNPT     | 1   | PUMPED DISCHARGE      |
| N4              | 4" FNPT     | 1   | DOUBLE CONTAINMENT    |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW      |
| N6              | 1/2" FNPT   | 1   | CDA TO SLW-PMP-2A     |
| N7              | 1/2" FNPT   | 1   | CDA TO SLW-PMP-2B     |
| N8              | 1/4" FNPT   | 1   | CDA TO PD SLW-TNK-2-1 |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC.
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 620 LBS
    - OPERATING WEIGHT: 1700 LBS
    - MAXIMUM WEIGHT: 1885 LBS
  - TANK VOLUME: 142 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 4    | 7/07/2015  | MM  | REVISED AS BUILT         |
| 3    | 6/08/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 09/22/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

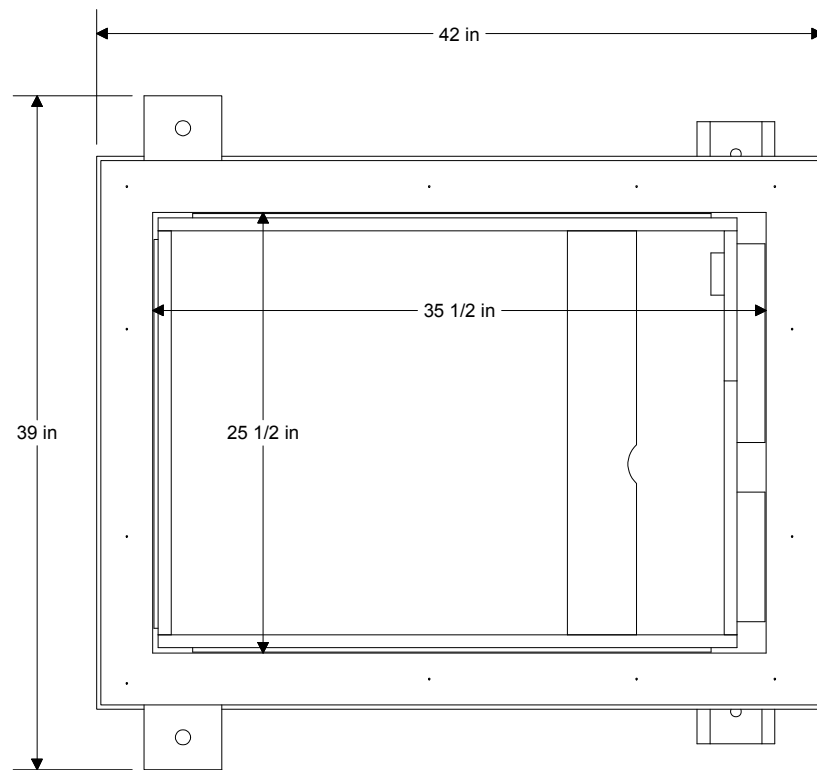
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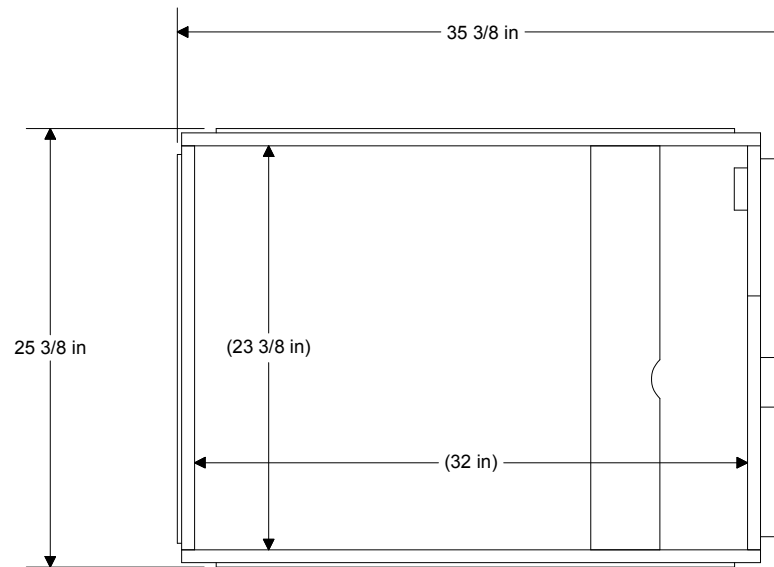
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| TITLE: ARIA<br>GRINDER AREA LIFT STATION (SLW-LS2)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>4 |
|--------------------------------------------------------------------------------------|---------------|

|           |                           |
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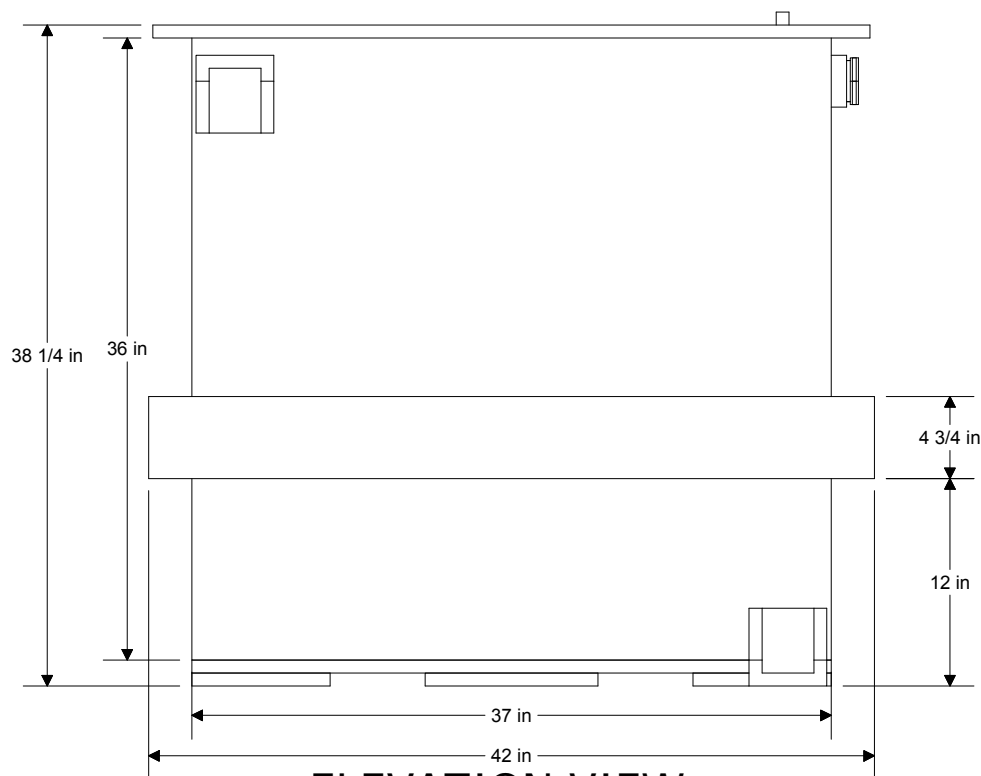




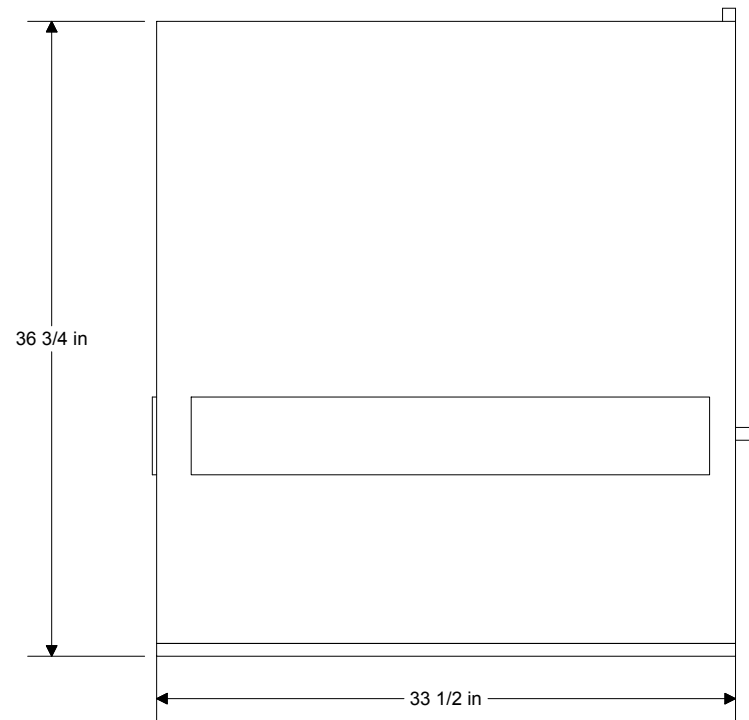
PLAN VIEW  
CONTAINMENT TANK  
VOLUME: 142 GAL



PLAN VIEW  
PRIMARY TANK  
VOLUME: 116 GAL



ELEVATION VIEW



ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                       |
|-----------------|-------------|-----|-----------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE               |
| N1              | 3" FLANGE   | 1   | INLET                 |
| N2              | 2" FNPT     | 1   | VENT                  |
| N3              | 2" FNPT     | 1   | PUMPED DISCHARGE      |
| N4              | 4" FNPT     | 1   | DOUBLE CONTAINMENT    |
| N5              | 2" FNPT     | 2   | PLUGGED OVERFLOW      |
| N6              | 1/2" FNPT   | 1   | CDA TO SLW-PMP-2A     |
| N7              | 1/2" FNPT   | 1   | CDA TO SLW-PMP-2B     |
| N8              | 1/4" FNPT   | 1   | CDA TO PD SLW-TNK-2-1 |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - TANKS TO BE FABRICATED FROM 3/4" THICK WHITE POLYPROPYLENE.
    - ACCESS DOORS AND HATCHES TO BE 1/4" THICK CLEAR PVC.
    - ALL PIPING AND FITTINGS TO BE SCH 80 CPVC.
    - HARDWARE TO BE 18-8 SS.
  - ALL SURFACES TO BE SEALED WITH PTFE GASKET TAPE.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY. ANCHOR BOLTS TO BE SUPPLIED AND INSTALLED BY OTHERS.
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE TANK.
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - DRY WEIGHT: 620 LBS
    - OPERATING WEIGHT: 1700 LBS
    - MAXIMUM WEIGHT: 1885 LBS
  - TANK VOLUME: 142 GAL

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 4    | 7/07/2015  | MM  | REVISED AS BUILT         |
| 3    | 6/08/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 09/22/2014 |
| PROJECT ENG.:        | JB |            |
| ENGINEERING MANAGER: | SS |            |

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| TITLE: ARIA<br>GRINDER AREA LIFT STATION (SLW-LS2)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>4 |
|--------------------------------------------------------------------------------------|---------------|

|           |                           |
|-----------|---------------------------|
| SIZE<br>B | DWG. NO.<br>141193-MG-213 |
|-----------|---------------------------|



## **HAZARDOUS WASTE TANK SYSTEM ASSESSMENT**

**ARIA**  
**Solvent Waste System**  
Santa Clara, CA

*Prepared for:*  
**Apple, Inc.**  
1 Infinite Loop  
Cupertino, California 95014

*Prepared by:*  
**TRC**  
10680 White Rock Road, Suite 100  
Rancho Cordova, CA 95670

**October 2022**

# HAZARDOUS WASTE TANK SYSTEM ASSESSMENT

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| II. PURPOSE                  | 1               |
| III. ASSESSMENT AND FINDINGS | 1               |
| IV. CERTIFICATION            | 4               |

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### LIST OF APPENDICES

- APPENDIX A: Photographs

### LIST OF ATTACHMENTS

- ATTACHMENT 1: Lift Station (SW-LS) Information  
ATTACHMENT 2: Collection Cabinet (SW-CC-1) Information  
ATTACHMENT 3: Leak Test Records  
ATTACHMENT 4: Solvent Waste Tank (SW-TNK-2) Information

## **I. INTRODUCTION**

This assessment is specifically for the Solvent Waste (SW) System at the Apple, Inc. (Apple) ARIA facility (Facility), located at 3250 Scott Boulevard in Santa Clara, California.

This assessment was performed in accordance with the requirements of Section 66265.192 of Title 22 of the California Code of Regulations (22 CCR 66265.192), and included a physical inspection of the tank system and an evaluation of secondary containment.

The SW System was originally assessed in 2015. Modifications to the SW System were completed in 2018 and the new components were assessed at that time. This is a 5-year re-assessment per 22 CCR 66265.192(h)(1) to bring all systems at the facility onto the same assessment schedule.

## **II. PURPOSE**

22 CCR 66265.192 requires that owners of a new hazardous waste tank system (subject to 22 CCR 67450.2 "Permit by Rule") to ensure that the tank system is adequately designed and constructed, and obtain and keep on file at the Facility a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California that attests to the tank system's integrity.

The written assessment shall determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored or treated to ensure that it will not collapse, rupture, or fail.

At a minimum, the assessment for an above-ground system shall include the following information: 1) design standard(s) according to which the tank and ancillary equipment have been constructed; 2) hazardous characteristics of the waste(s) to be handled; 3) foundation and seismic anchorage design.

All new tank systems shall be tested for tightness, and determined to be free of leaks before being placed in use.

In accordance with 22 CCR 66265.192(h)(1), the assessment is valid for a maximum period of five (5) years, and shall include all of the information described in 22 CCR 66265.192(k). The required assessment information is presented in the following Section III.

## **III. ASSESSMENT AND FINDINGS**

### **22 CCR 66265.192(k)(1)**

The tank system consists of the solvent waste pump lift station (SW-LS), solvent waste collection cabinet (SW-CC-1), a Solvent Waste Tank (SW-TNK-2) and ancillary piping. The lift station is a vertical rectangular tank constructed of stainless steel and has a primary tank capacity of 67 gallons. The Solvent Waste Tank is double-walled, with a primary tank constructed of stainless steel having a capacity of 1,700 gallons, and a secondary tank constructed of carbon steel having a capacity of 1,870 gallons.

## **22 CCR 66265.192(k)(2)**

### SW-LS

The solvent waste pump lift station tank is constructed of 12-ga. 316 stainless steel. Tank system structural design is in accordance CBC 2013 and ASCE 7-10. Ancillary piping, including containment piping, is Schedule 40 (SCH-40) stainless steel. See Figure 1 for pipe sizes. The lift station utilizes two (2) internal 1-hp stainless steel submersible pumps. A drawing of the tank, with dimensions, and collection cabinet (SW-CC-1) are included in Attachments 1 and 2, respectively.

### SW-TNK-2

The solvent waste tank (primary) is constructed of 316L stainless steel. Tank system structural design is in accordance with UL142 (Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids) and UL2085 (Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids). Ancillary piping from SW-CC-1 is carbon-impregnated PFA Teflon inside 304SS stainless steel containment. Ancillary piping to the tanker suction connection point is 316SS stainless steel inside 304SS stainless steel containment. See Figure 2 for pipe sizes. The tank is filled using the lift station pumps described above. A drawing of the tank, with dimensions, is included in Attachment 4.

## **22 CCR 66265.192(k)(3)**

The solvent waste lift station, collection cabinet and associated ancillary piping were constructed in 2015. The solvent tank was constructed in June 2017 and installation of the tank and ancillary piping was completed in 2018.

## **22 CCR 66265.192(k)(4)**

The lift station tank (SW-LS) is double-walled and the space between the primary and secondary tank is equipped with a liquid sensor that would detect a leak from the primary tank. The lift station pit is equipped with a liquid sensor that would detect a leak from the tank or related ancillary piping.

The collection cabinet (SW-CC-1) containment is also constructed of stainless steel and is equipped with a liquid sensor that would detect a leak from the drums or elsewhere within the cabinet.

The solvent waste tank (SW-TNK-2) is double-walled and the space between the primary and secondary tank is equipped with a liquid sensor that would detect a leak from the primary tank.

Ancillary pipe is double-walled and sloped to drain to liquid sensors that would detect a leak in the primary pipe.

All automated systems, including liquid sensors for leak detection, have been tested and confirmed to operate as designed.

**22 CCR 66265.192(k)(5)**

The tank system is entirely above-ground and materials are not subject to corrosion.

**22 CCR 66265.192(k)(6)**

The lift station tank, solvent waste tank and drums within the collection cabinet are equipped with ultrasonic level sensors to prevent overflow. All automated systems, including liquid level sensors and pump controls, have been tested and confirmed to operate as designed.

**22 CCR 66265.192(k)(7)**

The lift station tank (SW-LS) is set within a secondary containment tank, also constructed of 12-ga. SCH-40 stainless steel, with a capacity of 115 gallons.

The collection cabinet (SW-CC-1) has a secondary containment capacity of 78 gallons.

The solvent waste tank (SW-TNK-2) is double-walled, with a secondary tank capacity of 1,870 gallons.

Ancillary pipe is double-walled and sloped to drain to liquid sensors that would detect a leak in the primary pipe. The sensor locations area also fitted with ports that would allow for collection of the leaked liquid.

Along with the leak detection systems described above, the secondary containment for the tank system meets the standards of 22 CCR 66265.192(j) and 22 CCR 66265.193.

**22 CCR 66265.192(k)(8)**

The system generally handles solvent (approximately 5% isopropyl alcohol and other solvents in water) waste liquids generated from laboratory activities.

**22 CCR 66265.192(k)(9)**

No structural damage or inadequate construction/installation items (cracks, punctures, or damaged fittings) were observed.

**22 CCR 66265.192(k)(10)**

All ancillary pipe was leak tested using air-pressure, test results are included as Attachment 3.

The lift station and solvent waste tank were tested by the manufacturer prior to transport to the Facility.

**22 CCR 66265.192(k)(11)**

Based on the findings of this assessment, the tank system has an estimated remaining service life of approximately 20 years under existing conditions. The estimated remaining service life should be re-evaluated every five (5) years, in conjunction with the re-assessment in accordance with the requirements of 22 CCR 66265.192(h)(1).

IV. CERTIFICATION

**ARIA**  
**Solvent Waste System**  
**October 2022**

---

22 CCR 66265.192 requires that owners of a new hazardous waste tank system (subject to 22 CCR 67450.2 "Permit by Rule") ensure that the tank system is adequately designed and constructed, and obtain and keep on file at the Facility a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California that attests to the tank system's integrity.

The preceding written assessment has determined that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored or treated to ensure that it will not collapse, rupture, or fail. This assessment for an above-ground system considered the following: 1) design standard(s) according to which the tank and ancillary equipment have been constructed; 2) hazardous characteristics of the waste(s) to be handled; 3) foundation and seismic anchorage design.

The tank system was inspected on October 19, 2022. The visual inspection found none of the following to be in evidence: leaks, weld breaks, punctures, scrape of protective coatings, cracks, corrosion, structural damage or installation defects.

As required by 22 CCR 66265.192(k)(11), based on the findings of this assessment, I estimate that the new tank system has at least twenty (20) years of service life under current conditions. In accordance with 22 CCR 66265.192(h)(1), this assessment is valid for a maximum period of five (5) years and the tank system should be re-assessed at that time to obtain a new estimate of remaining service life.

**Based on my assessment of the tank system, I can attest that the tank system has sufficient structural integrity, is acceptable for transferring, storing and treating the intended hazardous waste, and is suitably designed to achieve the requirements under 22 CCR 66265.192.**

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*



Stephen V. Huvane, P.E.  
Civil (CA) No. 52385

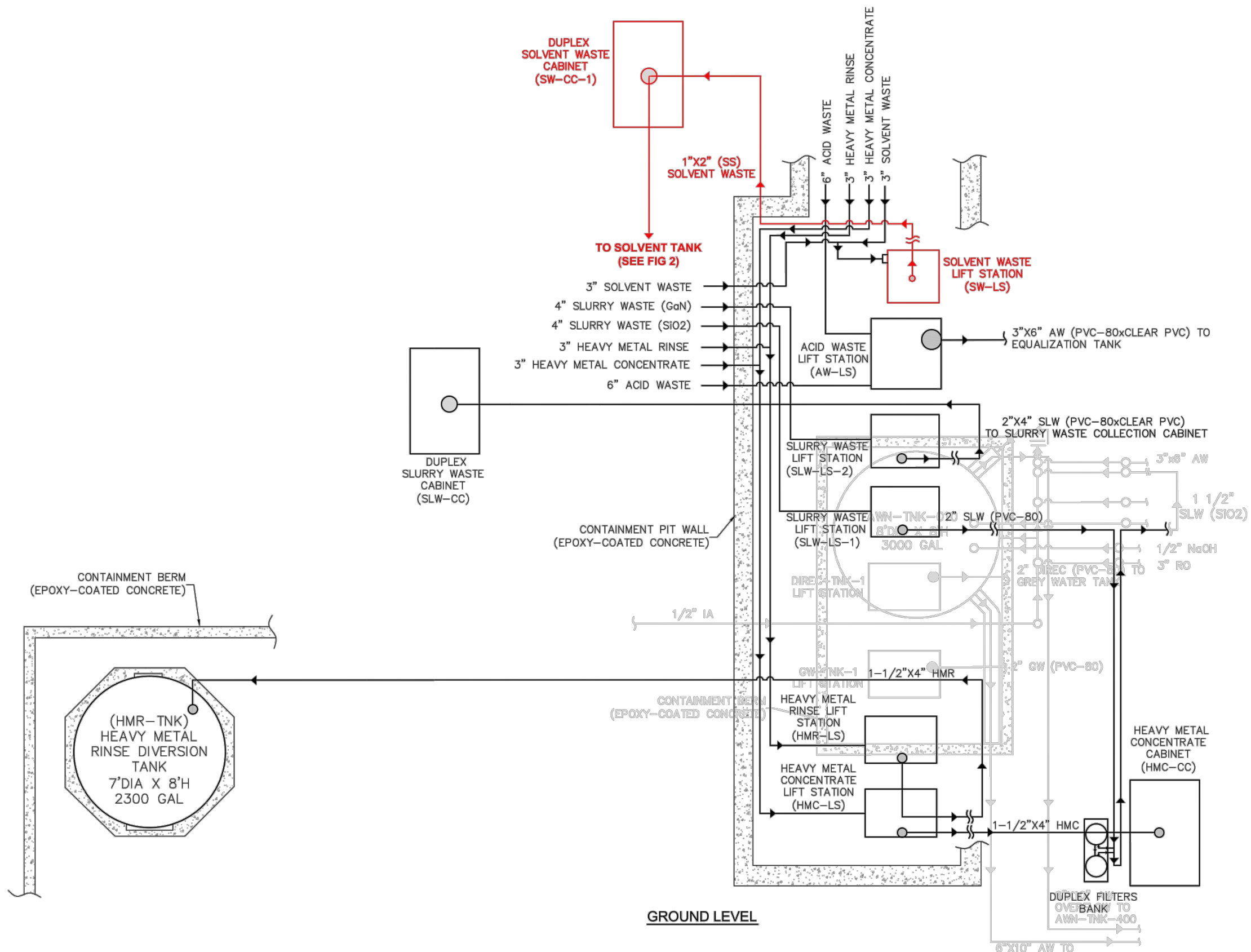


12-9-2022

Date

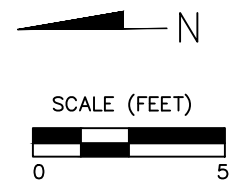
## FIGURES

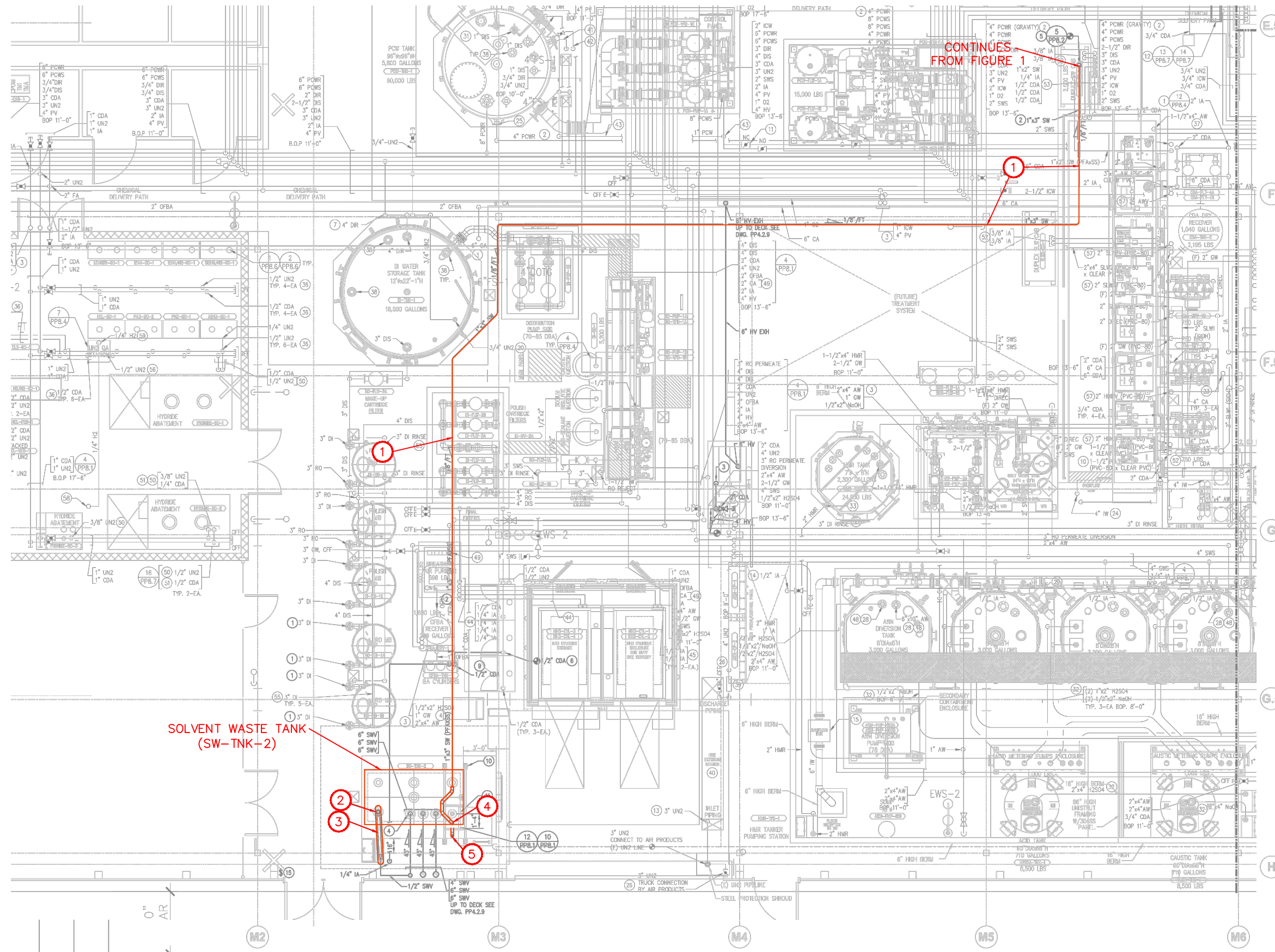




**LEGEND**  
 — SYSTEM COMPONENTS ASSESSED

# TANK SYSTEM LAYOUT SOLVENT WASTE SYSTEM





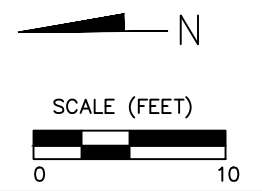
CONTINUES FROM FIGURE 1

SOLVENT WASTE TANK (SW-TNK-2)

- □ □ □
- ① SOLVENT WASTE TRANSFER PIPING TO BE 3" 304 SS x 1" CARBON IMPREGNATED PFA TEFLON TUBING, ORBITALLY WELDED, SECONDARY CONTAINMENT TUBING SHALL BE TOTALLY WELDED.
  - ② 6" SCH-5 SS 304 SECONDARY CONTAINMENT PIPE.
  - ③ 3" SW SS 316 SCH-40 TANKER SUCTION PIPE.
  - ④ 3" SS 304 SECONDARY CONTAINMENT TUBING DOWN TO BOX.
  - ⑤ LEAK SENSOR.

**LEGEND**  
 — SYSTEM COMPONENTS ASSESSED

# TANK SYSTEM LAYOUT SOLVENT WASTE SYSTEM



**APPENDIX A**

**PHOTOGRAPHS**

**October 19, 2022**



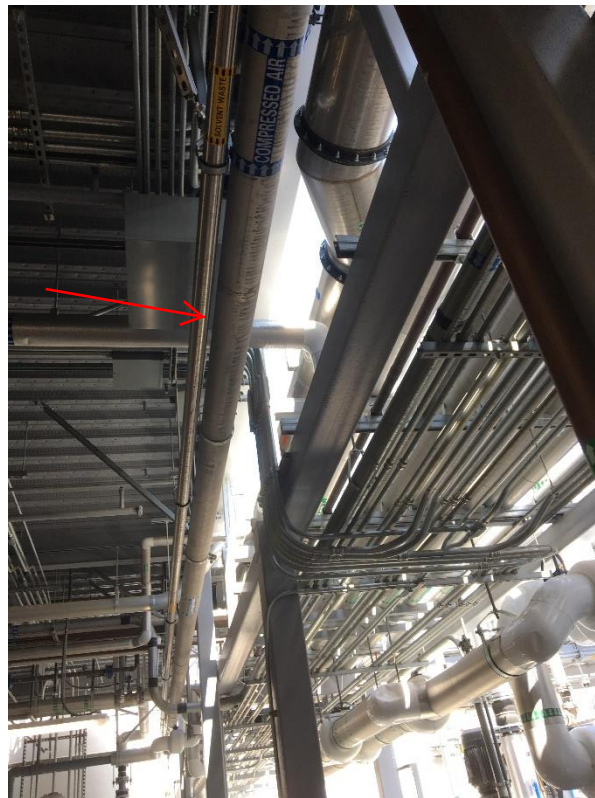
Solvent Waste Lift Station (SW-LS) and Ancillary Piping



Solvent Waste Collection Cabinet (SW-CC)



Solvent Waste Collection Cabinet (SW-CC) and Ancillary Piping



Ancillary Piping (2018 photo)



Ancillary Piping (2018 Photo)



Ancillary Piping (2018 Photo)



Solvent Waste Tank (SW-TNK-2) (2018 Photo)

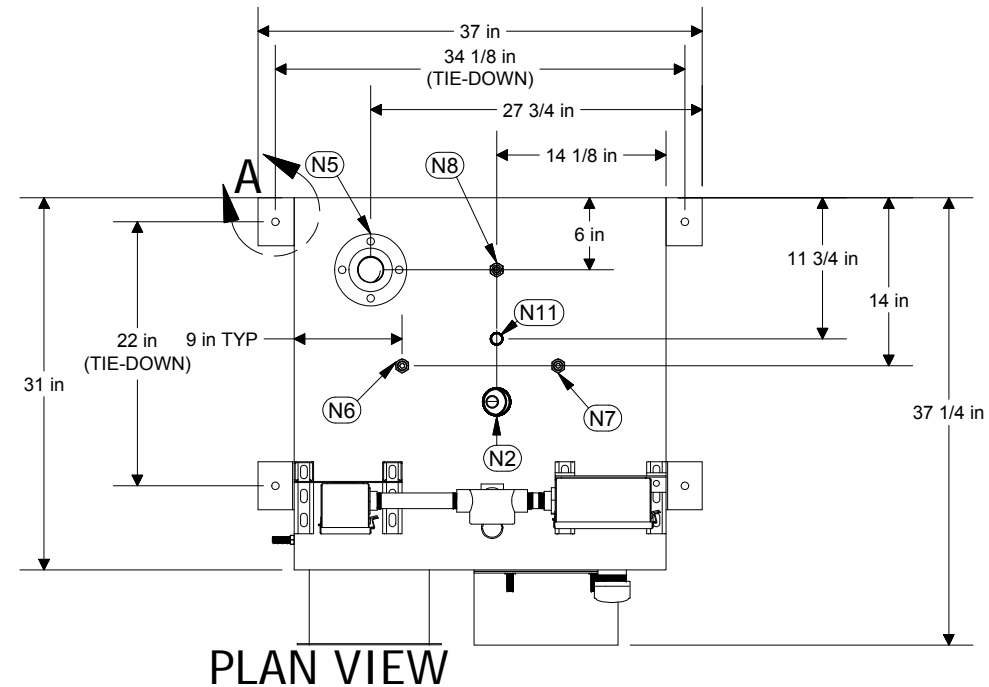


Solvent Waste Tank Pumpout Cabinet (2018 Photo)

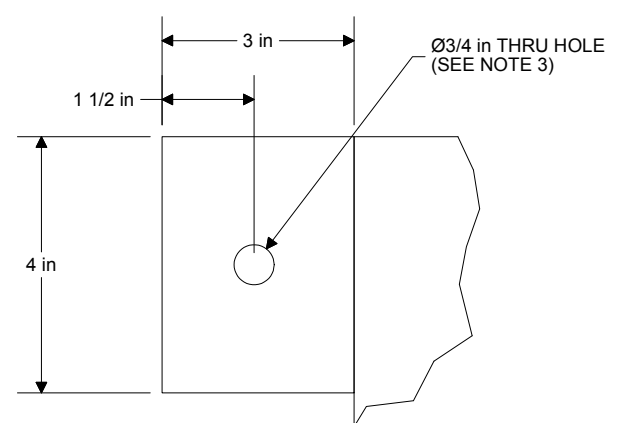
ATTACHMENT 1

LIFT STATION (SW-LS) INFORMATION

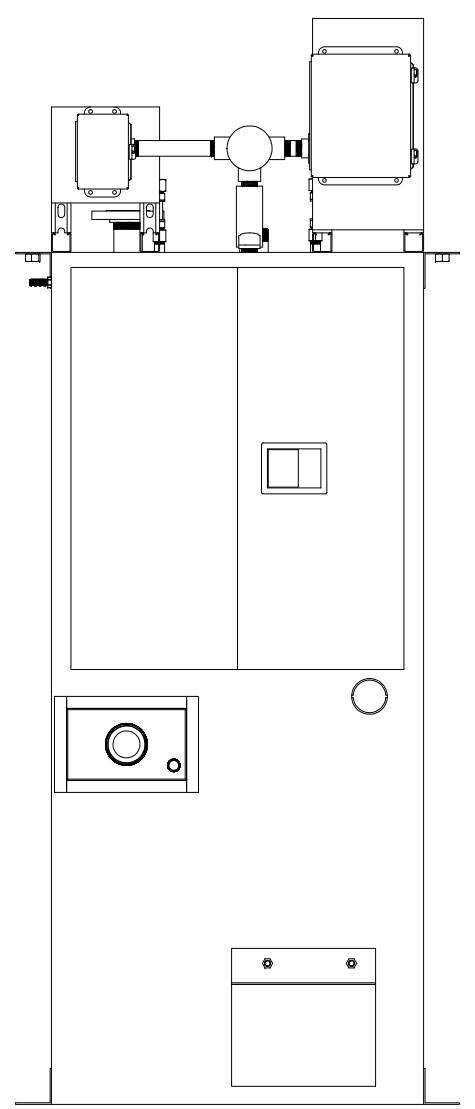




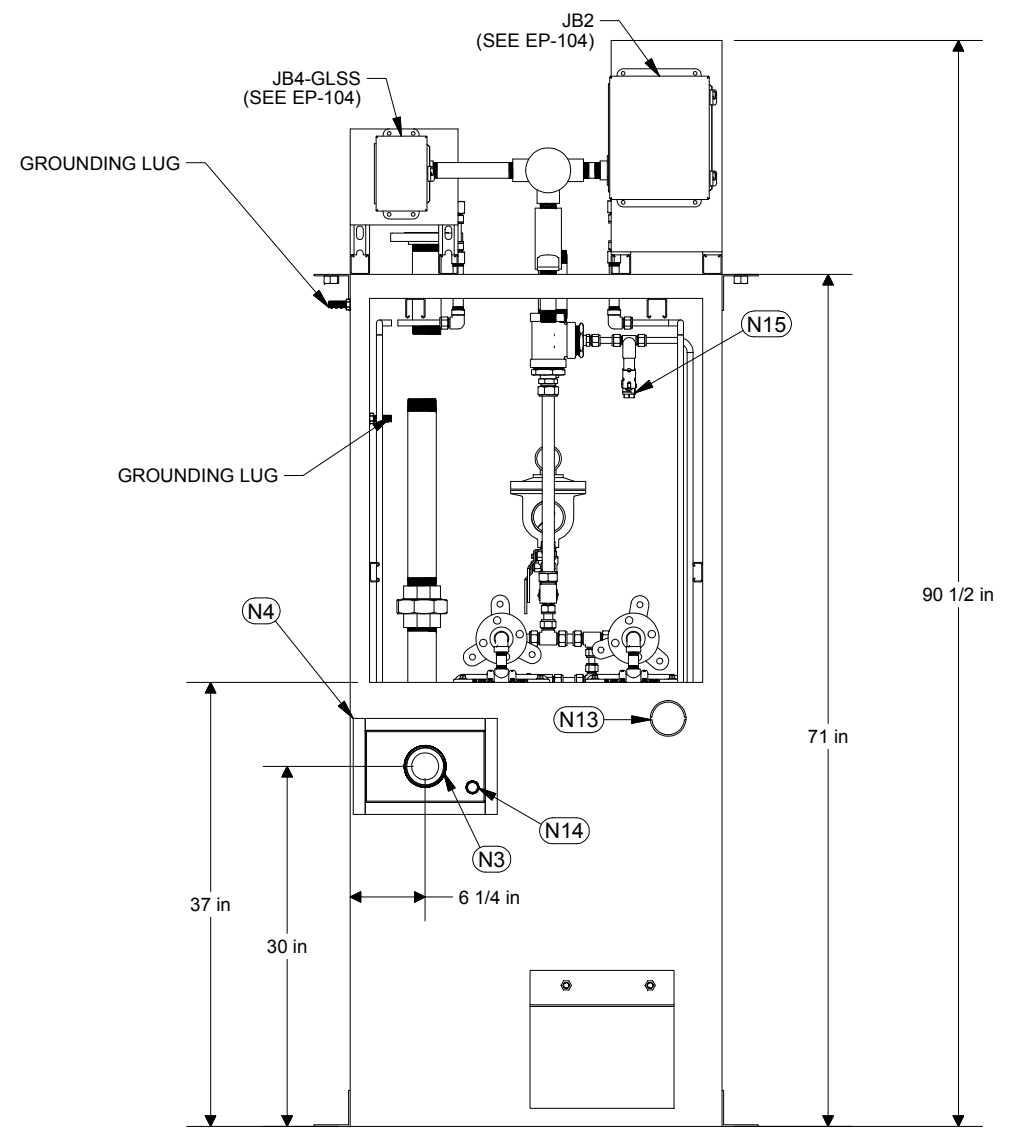
PLAN VIEW



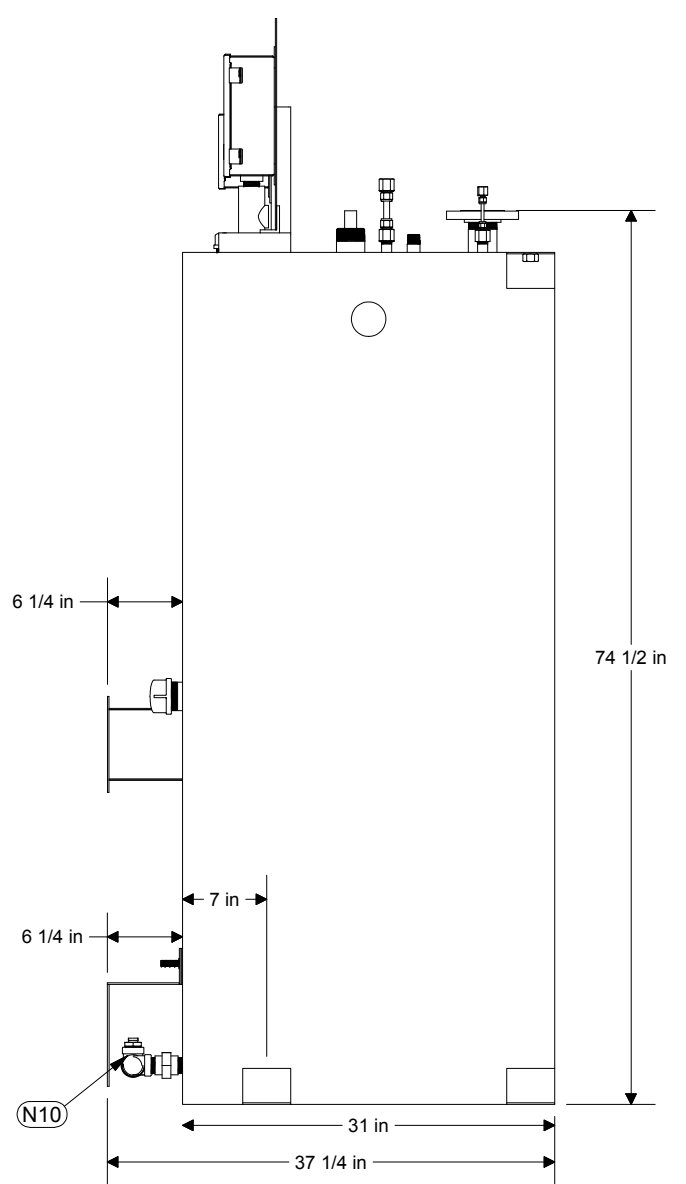
DETAIL A



FRONT ELEVATION VIEW (WITH DOORS)



FRONT ELEVATION VIEW



SIDE ELEVATION VIEW

| NOZZLE SCHEDULE |                 |     |                             |
|-----------------|-----------------|-----|-----------------------------|
| NOZZLE          | DESCRIPTION     | QTY | SERVICE                     |
| N1              | 1" TUBE         | 1   | DISCHARGE CONNECTION        |
| N2              | 2" MNPT         | 1   | DOUBLE CONTAINMENT          |
| N3              | 3" MNPT         | 1   | INLET CONNECTION            |
| N4              | 6" x 10" TROUGH | 1   | DOUBLE CONTAINMENT          |
| N5              | 2" FLANGE       | 1   | VENT CONNECTION             |
| N6              | 3/8" FNPT       | 1   | CDA SUPPLY TO SW-PMP-1A     |
| N7              | 3/8" FNPT       | 1   | CDA SUPPLY TO SW-PMP-1B     |
| N8              | 1/4" FNPT       | 1   | CDA SUPPLY TO PD SW-LS-1-1  |
| N9              | 2" FNPT         | 1   | OVERFLOW (PLUGGED)          |
| N10             | 1" FNPT         | 1   | SECONDARY TANK DRAIN        |
| N11             | 3/4" MNPT       | 1   | FIRE PROTECTION SYSTEM      |
| N12             | 1/2" TUBE       | 1   | SECONDARY CONTAINMENT DRAIN |
| N13             | 2" MNPT         | 1   | CABINET OVERFLOW            |
| N14             | 3/4" MNPT       | 1   | INLET CONTAINMENT DRAIN     |
| N15             | 1/4" FNPT       | 1   | CONTAINMENT DRAIN TEST PORT |

- NOTES:
- MATERIALS OF CONSTRUCTION:  
 A) CABINET TO BE FABRICATED FROM 304 STAINLESS STEEL  
 B) PRIMARY TANK TO BE FABRICATED FROM 12 GA 316 STAINLESS STEEL  
 C) TANK LID AND ENCLOSURE FABRICATED FROM 10 GA 316 STAINLESS STEEL  
 D) TIE-DOWNS FABRICATED FROM 1/4" THICK 316 STAINLESS STEEL  
 E) ALL PRESSURIZED PIPING, TUBING, AND FITTINGS 316SS SCHED 40  
 F) ALL NON PRESSURIZED PIPING, TUBING AND FITTINGS 316SS SCHED 10
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO SYSTEM.
  - ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED BY OTHERS.
  - DIMENSIONS FOR REFERENCE ONLY. TOLERANCE ±2%
  - APPROXIMATE EQUIPMENT WEIGHTS:  
 A) DRY WEIGHT: 825 LBS  
 B) OPERATING WEIGHT: 1420 LBS  
 C) MAXIMUM WEIGHT: 1890 LBS

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 5/14/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
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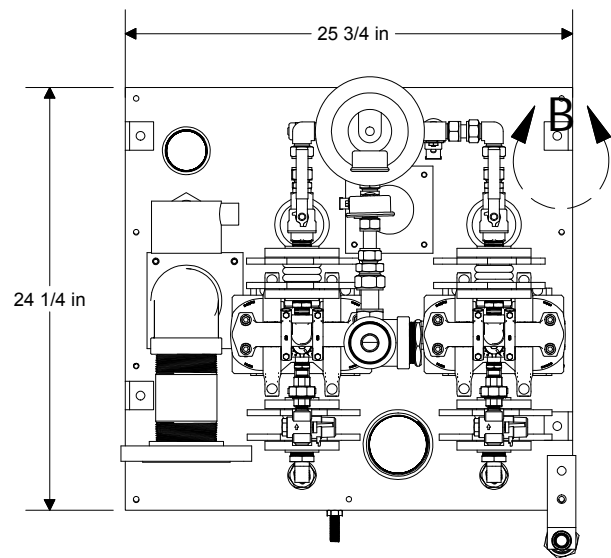
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| ENGINEERING MANAGER: | SS |            |

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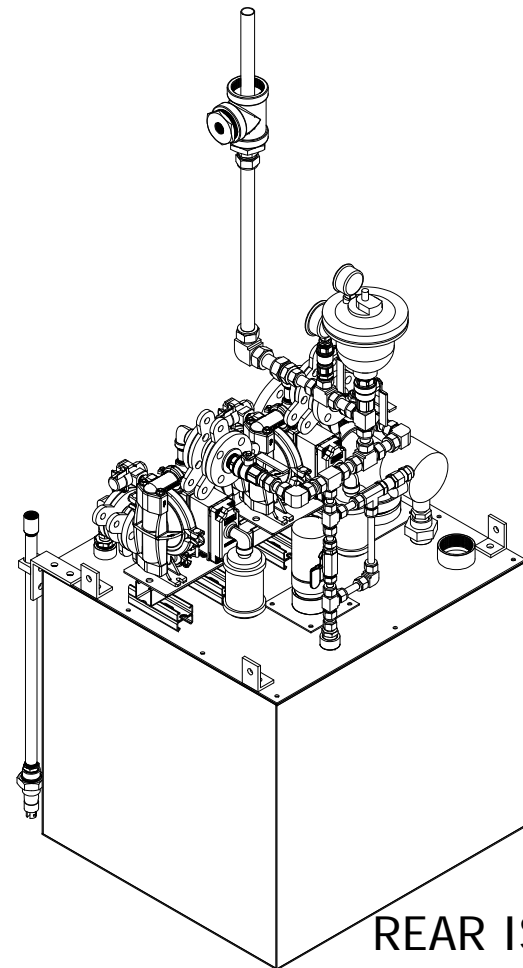


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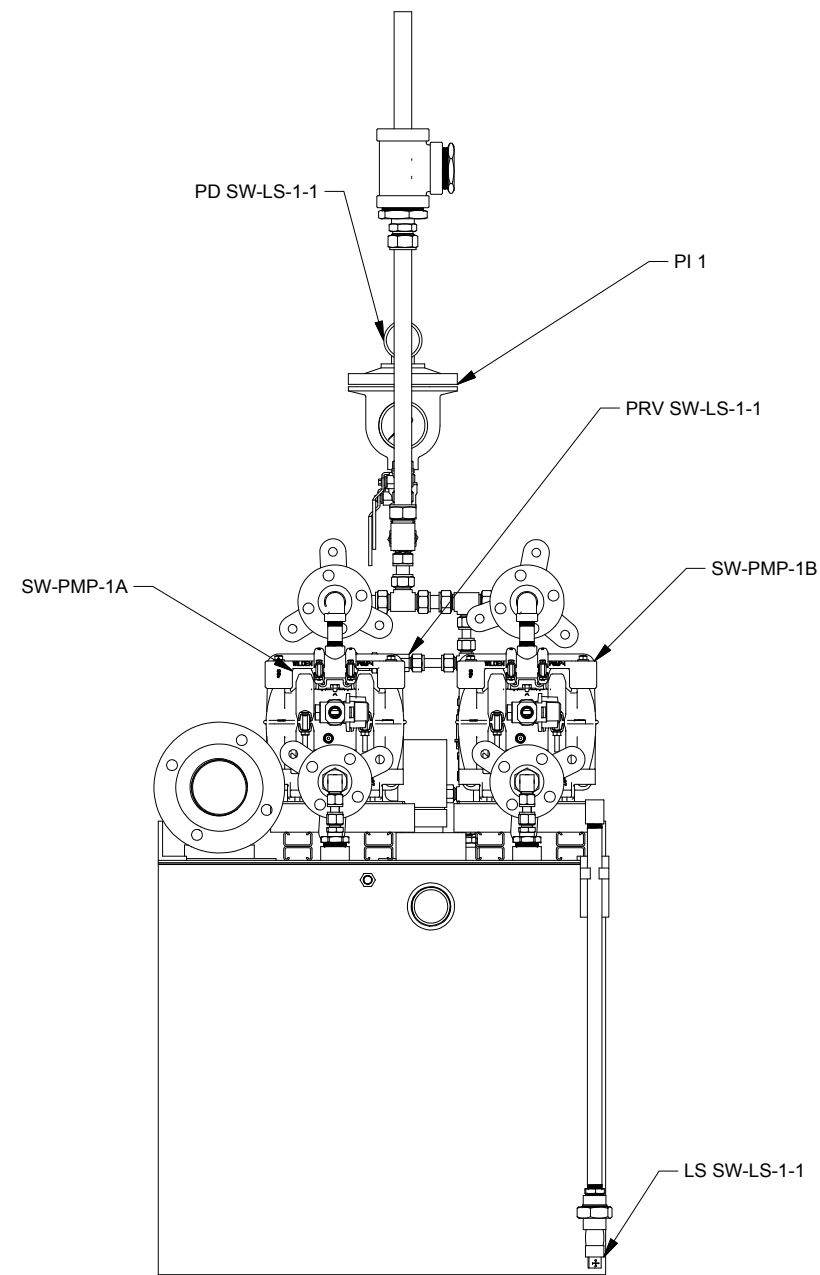
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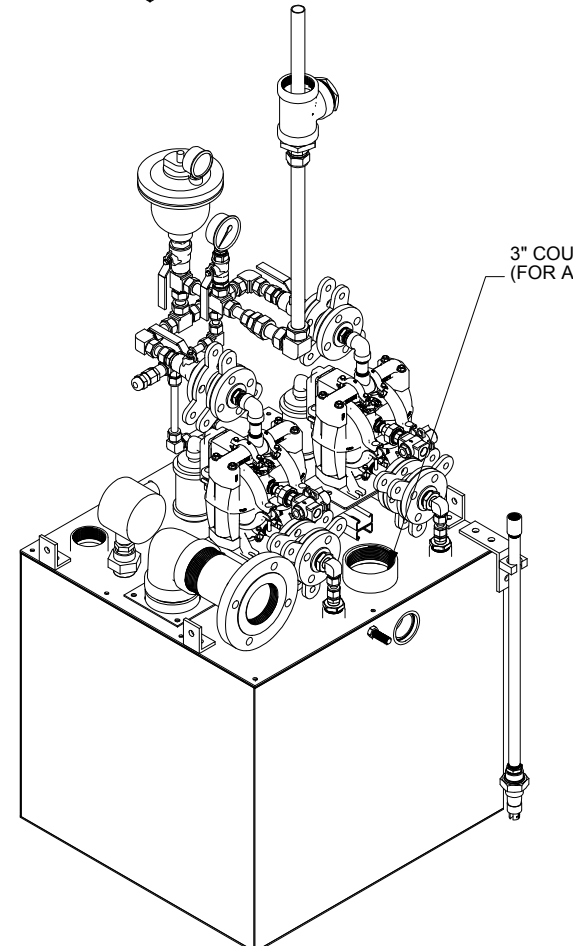
PLAN VIEW



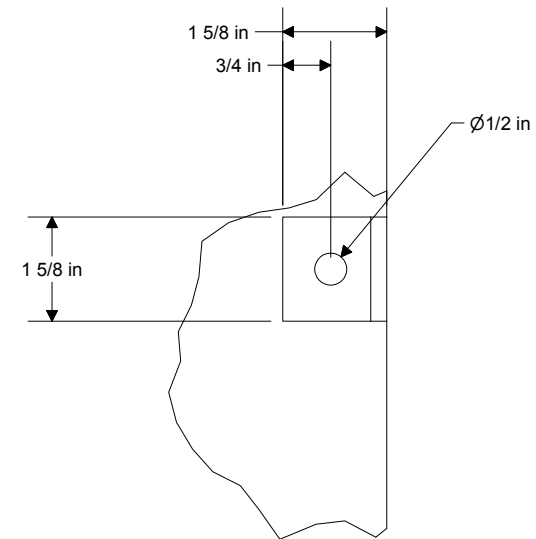
REAR ISOMETRIC VIEW



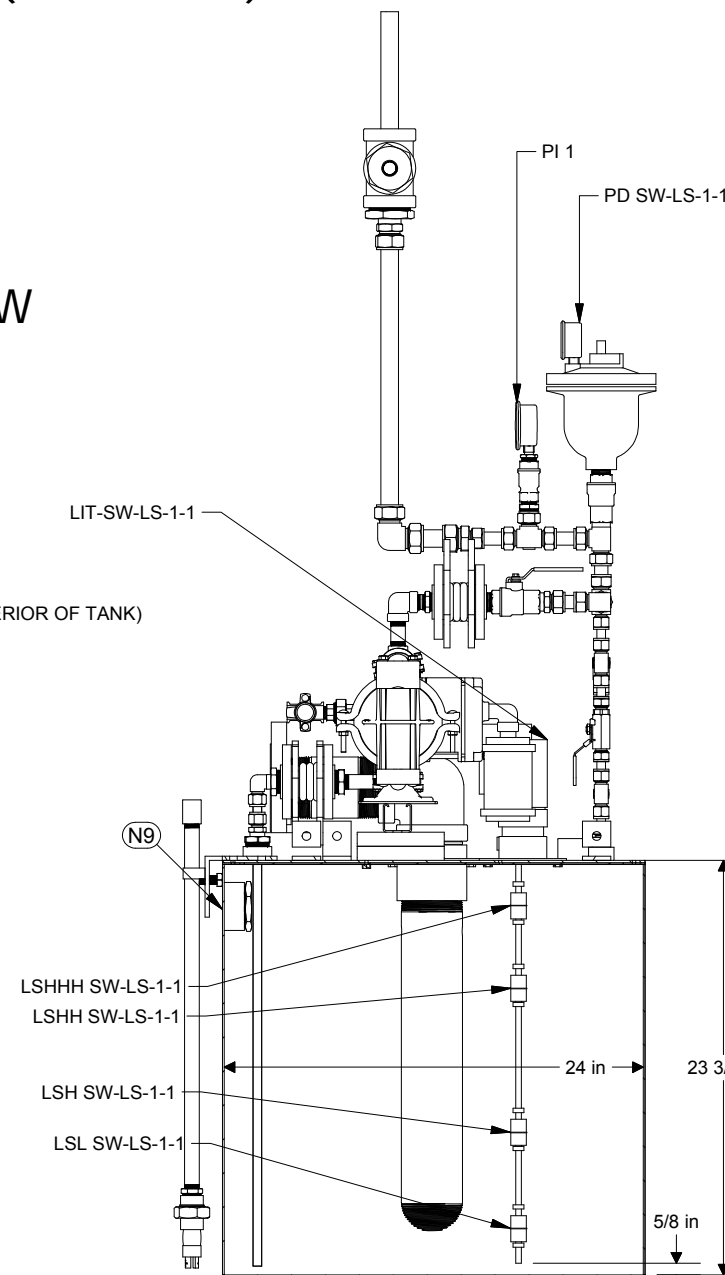
ELEVATION VIEW



FRONT ISOMETRIC VIEW



DETAIL B  
(TIE-DOWN)



SIDE ELEVATION VIEW

| NOZZLE SCHEDULE |                 |     |                             |
|-----------------|-----------------|-----|-----------------------------|
| NOZZLE          | DESCRIPTION     | QTY | SERVICE                     |
| N1              | 1" TUBE         | 1   | DISCHARGE CONNECTION        |
| N2              | 2" MNPT         | 1   | DOUBLE CONTAINMENT          |
| N3              | 3" MNPT         | 1   | INLET CONNECTION            |
| N4              | 6" x 10" TROUGH | 1   | DOUBLE CONTAINMENT          |
| N5              | 2" FLANGE       | 1   | VENT CONNECTION             |
| N6              | 3/8" FNPT       | 1   | CDA SUPPLY TO SW-PMP-1A     |
| N7              | 3/8" FNPT       | 1   | CDA SUPPLY TO SW-PMP-1B     |
| N8              | 1/4" FNPT       | 1   | CDA SUPPLY TO PD SW-LS-1-1  |
| N9              | 2" FNPT         | 1   | OVERFLOW (PLUGGED)          |
| N10             | 1" FNPT         | 1   | SECONDARY TANK DRAIN        |
| N11             | 3/4" MNPT       | 1   | FIRE PROTECTION SYSTEM      |
| N12             | 1/2" TUBE       | 1   | SECONDARY CONTAINMENT DRAIN |
| N13             | 2" MNPT         | 1   | CABINET OVERFLOW            |
| N14             | 3/4" MNPT       | 1   | INLET CONTAINMENT DRAIN     |
| N15             | 1/4" FNPT       | 1   | CONTAINMENT DRAIN TEST PORT |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - A) CABINET TO BE FABRICATED FROM 304 STAINLESS STEEL
    - B) PRIMARY TANK TO BE FABRICATED FROM 12 GA 316 STAINLESS STEEL
    - C) TANK LID AND ENCLOSURE FABRICATED FROM 10 GA 316 STAINLESS STEEL
    - D) TIE-DOWNS FABRICATED FROM 1/4" THICK 316 STAINLESS STEEL
    - E) ALL PRESSURIZED PIPING, TUBING, AND FITTINGS 316SS SCHED 40
    - F) ALL NON PRESSURIZED PIPING, TUBING AND FITTINGS 316SS SCHED 10
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO SYSTEM.
  - ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED BY OTHERS.
  - DIMENSIONS FOR REFERENCE ONLY. TOLERANCE ±2%
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - A) DRY WEIGHT: 825 LBS
    - B) OPERATING WEIGHT: 1420 LBS
    - C) MAXIMUM WEIGHT: 1890 LBS

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 5/14/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

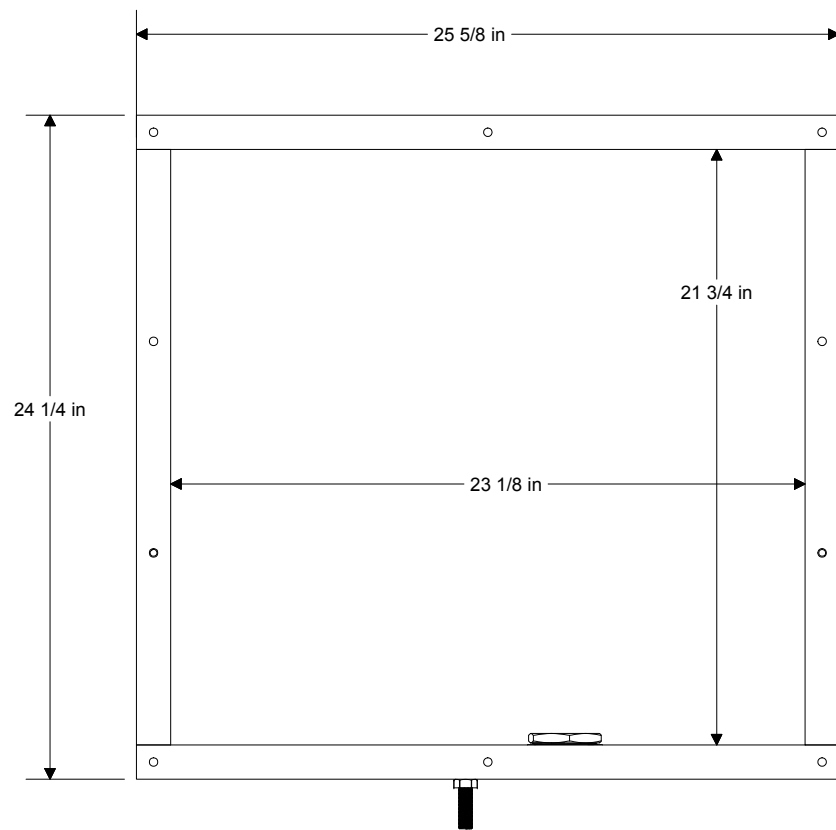
| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

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|                                                                                           |               |
|-------------------------------------------------------------------------------------------|---------------|
| TITLE: ARIA<br>SOLVENT CONCENTRATE LIFT STATION (SW-LS)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>3 |
|-------------------------------------------------------------------------------------------|---------------|

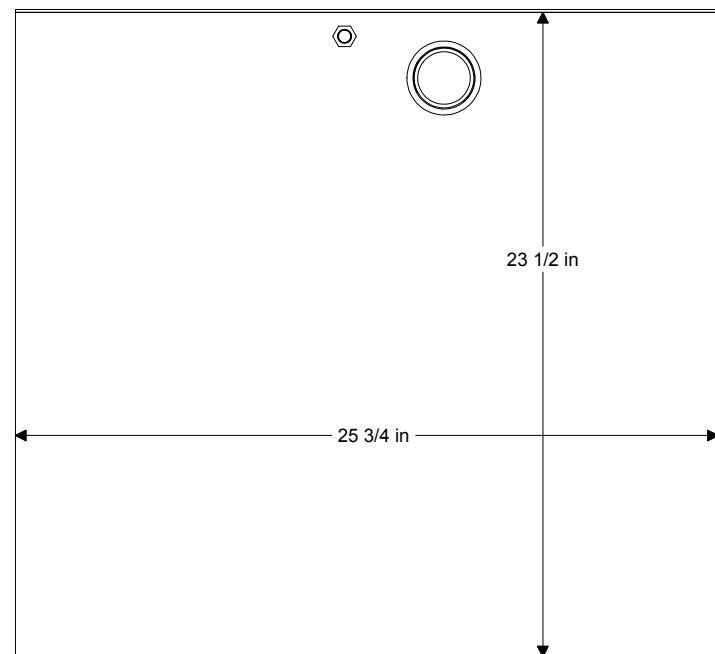
|           |                           |            |               |
|-----------|---------------------------|------------|---------------|
| SIZE<br>B | DWG. NO.<br>141194-MG-102 | SCALE: NTS | SHEET: 2 OF 3 |
|-----------|---------------------------|------------|---------------|



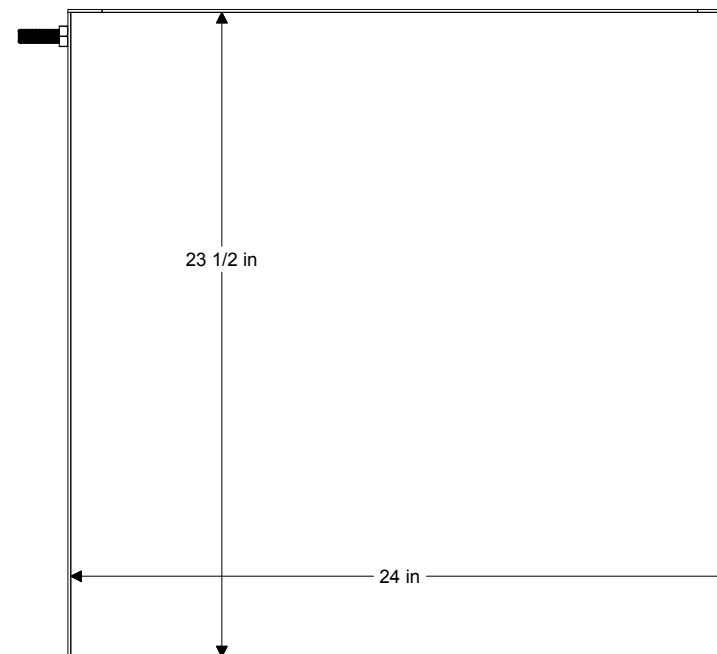
PLAN VIEW

TANK VOLUME: 67 GAL

CONTAINMENT VOLUME  
IN CABINET: 115 GAL



ELEVATION VIEW



SIDE ELEVATION VIEW

| NOZZLE SCHEDULE |                 |     |                             |
|-----------------|-----------------|-----|-----------------------------|
| NOZZLE          | DESCRIPTION     | QTY | SERVICE                     |
| N1              | 1" TUBE         | 1   | DISCHARGE CONNECTION        |
| N2              | 2" MNPT         | 1   | DOUBLE CONTAINMENT          |
| N3              | 3" MNPT         | 1   | INLET CONNECTION            |
| N4              | 6" x 10" TROUGH | 1   | DOUBLE CONTAINMENT          |
| N5              | 2" FLANGE       | 1   | VENT CONNECTION             |
| N6              | 3/8" FNPT       | 1   | CDA SUPPLY TO SW-PMP-1A     |
| N7              | 3/8" FNPT       | 1   | CDA SUPPLY TO SW-PMP-1B     |
| N8              | 1/4" FNPT       | 1   | CDA SUPPLY TO PD SW-LS-1-1  |
| N9              | 2" FNPT         | 1   | OVERFLOW (PLUGGED)          |
| N10             | 1" FNPT         | 1   | SECONDARY TANK DRAIN        |
| N11             | 3/4" MNPT       | 1   | FIRE PROTECTION SYSTEM      |
| N12             | 1/2" TUBE       | 1   | SECONDARY CONTAINMENT DRAIN |
| N13             | 2" MNPT         | 1   | CABINET OVERFLOW            |
| N14             | 3/4" MNPT       | 1   | INLET CONTAINMENT DRAIN     |
| N15             | 1/4" FNPT       | 1   | CONTAINMENT DRAIN TEST PORT |

- NOTES:
- MATERIALS OF CONSTRUCTION:
    - A) CABINET TO BE FABRICATED FROM 304 STAINLESS STEEL
    - B) PRIMARY TANK TO BE FABRICATED FROM 12 GA 316 STAINLESS STEEL
    - C) TANK LID AND ENCLOSURE FABRICATED FROM 10 GA 316 STAINLESS STEEL
    - D) TIE-DOWNS FABRICATED FROM 1/4" THICK 316 STAINLESS STEEL
    - E) ALL PRESSURIZED PIPING, TUBING, AND FITTINGS 316SS SCHED 40
    - F) ALL NON PRESSURIZED PIPING, TUBING AND FITTINGS 316SS SCHED 10
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO SYSTEM.
  - ANCHOR BOLTS TO BE SIZED BY WASTECH, SUPPLIED BY OTHERS.
  - DIMENSIONS FOR REFERENCE ONLY. TOLERANCE ±2%
  - APPROXIMATE EQUIPMENT WEIGHTS:
    - A) DRY WEIGHT: 825 LBS
    - B) OPERATING WEIGHT: 1420 LBS
    - C) MAXIMUM WEIGHT: 1890 LBS

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 5/14/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 12/12/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 12/12/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

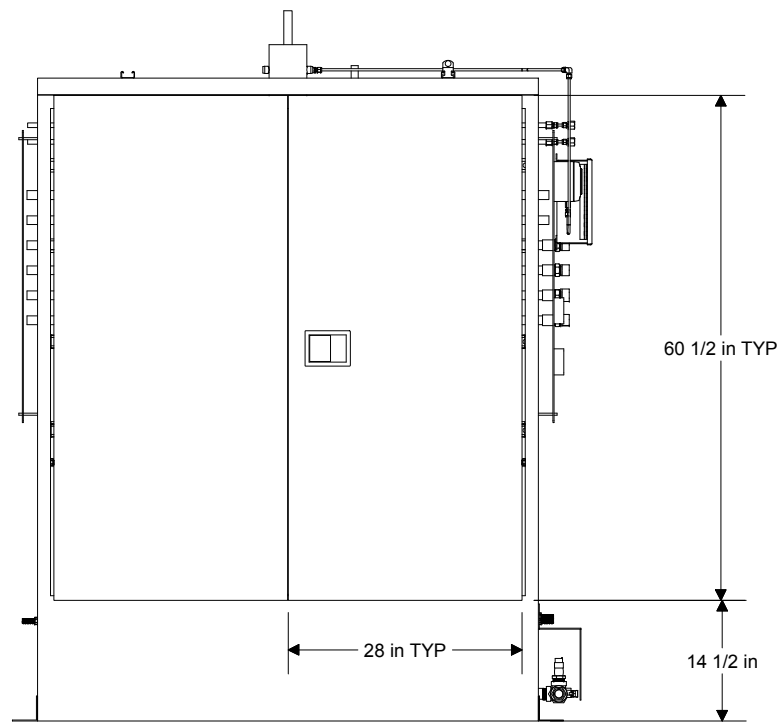
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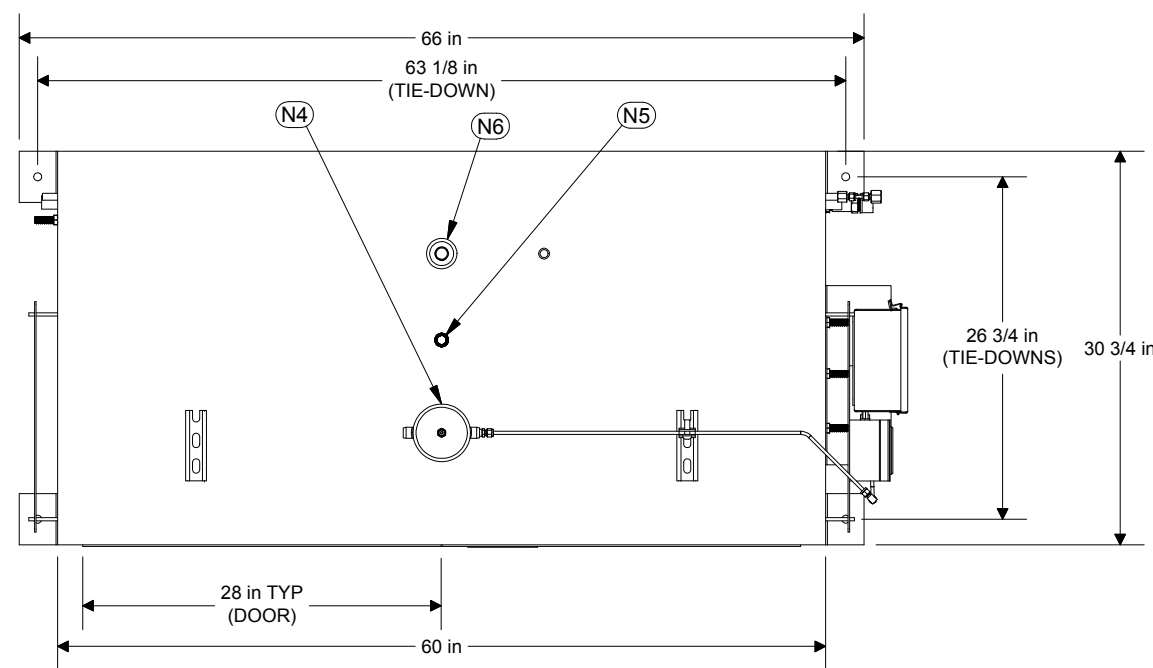
|                                                                                           |                           |
|-------------------------------------------------------------------------------------------|---------------------------|
| TITLE: ARIA<br>SOLVENT CONCENTRATE LIFT STATION (SW-LS)<br>MECHANICAL GENERAL ARRANGEMENT | REVISION<br>3             |
| SIZE<br>B                                                                                 | DWG. NO.<br>141194-MG-103 |
| SCALE: NTS                                                                                | SHEET: 3 OF 3             |

ATTACHMENT 2

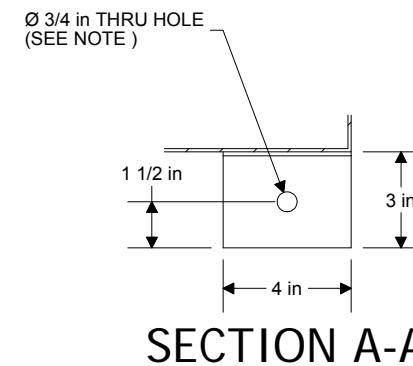
COLLECTION CABINET (SW-CC-1) INFORMATION



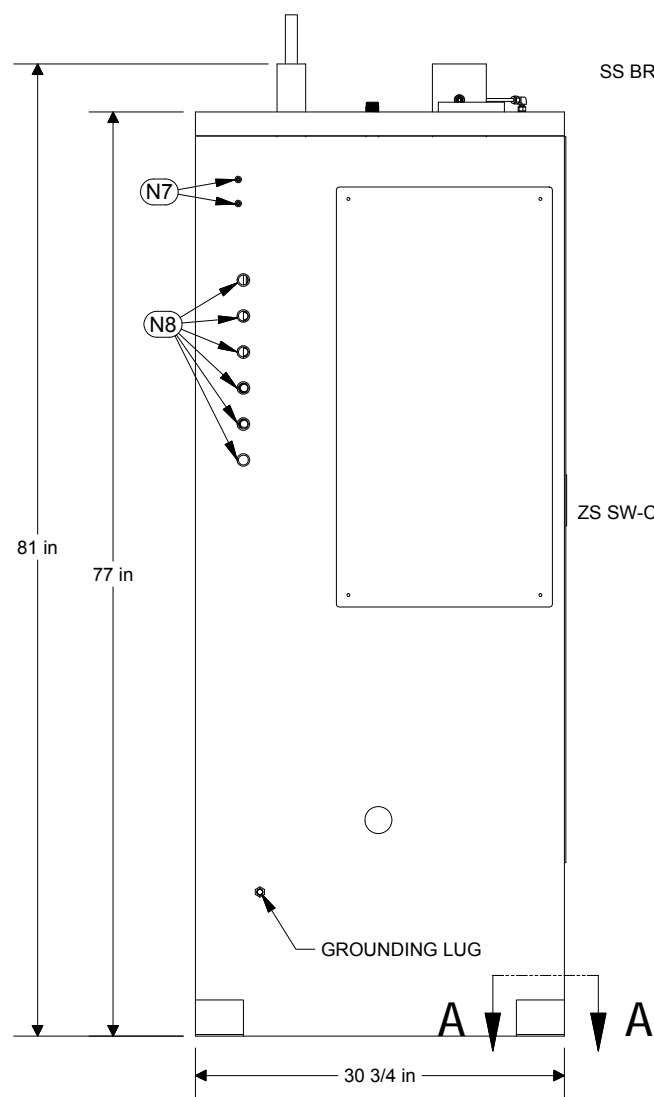
FRONT VIEW



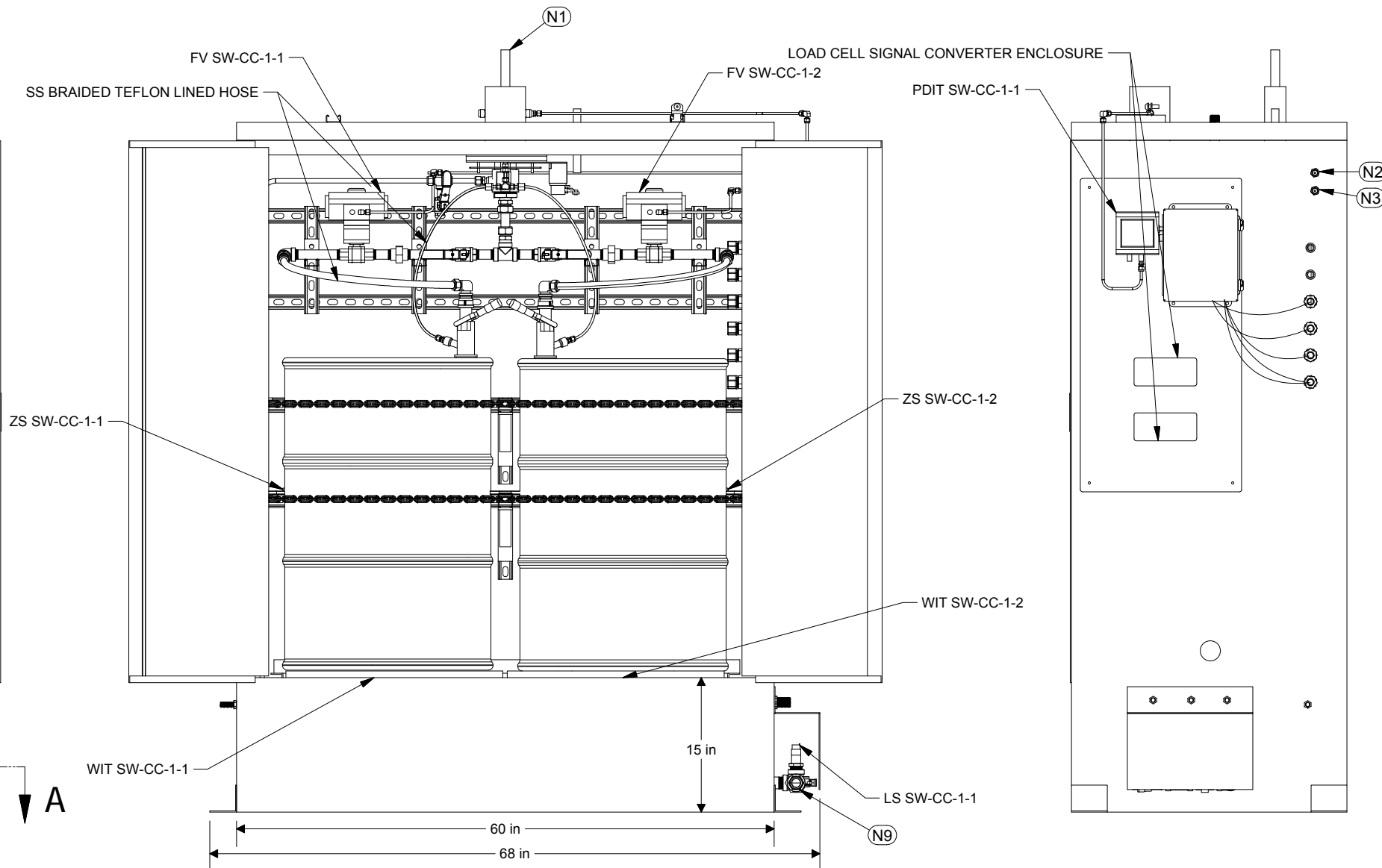
PLAN VIEW



SECTION A-A



SIDE ELEVATION VIEW



FRONT ELEVATION VIEW

SIDE ELEVATION VIEW

| NOZZLE SCHEDULE |             |     |                           |
|-----------------|-------------|-----|---------------------------|
| NOZZLE          | DESCRIPTION | QTY | SERVICE                   |
| N1              | 1" TUBE     | 1   | SOLVENT INLET             |
| N2              | 3/8" FNPT   | 1   | CDA INLET TO FV SW-CC-1-1 |
| N3              | 3/8" FNPT   | 1   | CDA INLET TO FV SW-CC-1-2 |
| N4              | 4" MNPT     | 1   | CABINET VENT              |
| N5              | 3/4" MNPT   | 1   | FIRE PROTECTION INLET     |
| N6              | 2" MNPT     | 1   | INLET DOUBLE CONTAINMENT  |
| N7              | 3/8" FNPT   | 2   | PLUGGED SPARE             |
| N8              | 1" FNPT     | 6   | PLUGGED SPARE             |
| N9              | 1" FNPT     | 1   | CONTIANMENT DRAIN         |

- NOTES:
- MATERIALS OF CONSTRUCTION  
A) CABINET TO BE FABRICATED FROM 304 STAINLESS STEEL.  
B) ROLLERS TO BE FABRICATED FROM STAINLESS STEEL.
  - DRUMS TO BE PROVIDED BY OTHERS.
  - ALL PIPING AND FITTINGS TO BE 316 SS SCH 40.
  - SOME SUPPORTS NOT SHOWN FOR CLARITY
  - INSTALLATION, INTERCONNECTING PIPING AND WIRING SUPPLIED AND INSTALLED BY OTHERS. INSTALLER TO PROVIDE ADEQUATE VENTILATION TO THE CABINET.
  - ANCHOR BOLTS TO BE SIZED BY WASTECH AND PROVIDED BY OTHERS.
  - DOUBLE CONTAINMENT VOLUME: 78 GALLONS
  - APPROXIMATE EQUIPMENT WEIGHTS:  
A) DRY WEIGHT: 1100 LBS  
B) OPERATING WEIGHT: 1850 LBS  
C) MAXIMUM WEIGHT: 2500 LBS

| REV. | DATE:      | BY: | DESCRIPTION              |
|------|------------|-----|--------------------------|
| 3    | 6/08/2015  | MM  | AS BUILT                 |
| 2    | 3/31/2015  | MM  | ISSUED FOR FABRICATION   |
| 1    | 1/22/2015  | MM  | RESUBMITTED FOR APPROVAL |
| 0    | 08/15/2014 | MM  | SUBMITTED FOR APPROVAL   |

| APPROVALS            |    | DATE       |
|----------------------|----|------------|
| DRAWN BY:            | MM | 08/15/2014 |
| PROJECT ENG.:        | SS |            |
| ENGINEERING MANAGER: | SS |            |

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|                                                                                 |            |
|---------------------------------------------------------------------------------|------------|
| TITLE: ARIA SOLVENT COLLECTION CABINET (SW-CC-1) MECHANICAL GENERAL ARRANGEMENT | REVISION 3 |
|---------------------------------------------------------------------------------|------------|

ATTACHMENT 3  
LEAK TEST RECORDS



# PRESSURE TEST FORM

|                              |                        |                      |
|------------------------------|------------------------|----------------------|
| Project: <u>ARMS</u>         |                        | Test No.: <u>59</u>  |
| System: <u>SOLVENT WASTE</u> | Job #: <u>330382-I</u> | Date: <u>9/23/15</u> |

## Brief Description of Test and Boundaries

CONTINUED  
ON TEST 60

|                              |                                                                      |
|------------------------------|----------------------------------------------------------------------|
| Drawing / Spool #:           | <u>SOLVENT WASTE PRIMARY FROM LIFT STATION TO COLLECTION CABINET</u> |
| Specification Title Section: | <u>SOLVENT WASTE PRIMARY</u>                                         |
| Allowable Pressure Change:   | <u>0</u> PSIG <u>100</u>                                             |
| Test Medium:                 | <u>AIR</u>                                                           |
| Point of Connection:         | <u>LIFT STATION (IN TRENCH)</u>                                      |
| Point of Termination:        | <u>COLLECTION CABINET</u>                                            |

## Test Results

| Date           | Time         |                 |               | Pressure      |               | Passed                                       | Comments                               |
|----------------|--------------|-----------------|---------------|---------------|---------------|----------------------------------------------|----------------------------------------|
|                | Start        | End             | Duration      | Start         | End           | (Yes / No)                                   |                                        |
| <u>9/23/15</u> | <u>7:00</u>  |                 | <u>24</u>     | <u>0</u>      |               | Yes / No                                     |                                        |
| <u>9/25/15</u> | <u>06:32</u> | <u>09:17 AM</u> | <u>7:30 M</u> | <u>94 PSI</u> | <u>97 PSI</u> | <input checked="" type="checkbox"/> Yes / No | <u>PROBLEM SOLV LIFT STA SMART RUN</u> |
|                |              |                 |               |               |               | Yes / No                                     | <u>7 SOLV COLLECT CABINET (TEMP)</u>   |
|                |              |                 |               |               |               | Yes / No                                     |                                        |
|                |              |                 |               |               |               | Yes / No                                     |                                        |

COMMENTS: \_\_\_\_\_

Completed By: P. B. B.

Date: 9-23-15

Witnessed By: D.M. J.

Date: 9/25/15



# PRESSURE TEST FORM

|                              |                        |                      |
|------------------------------|------------------------|----------------------|
| Project: <u>ARIAS</u>        |                        | Test No.: <u>60</u>  |
| System: <u>SOLVENT WASTE</u> | Job #: <u>330382-I</u> | Date: <u>9/23/15</u> |

## Brief Description of Test and Boundaries

CONTINUED FROM TEST 59

|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| Drawing / Spool #:           | <u>SECONDARY SOLVENT WASTE LINE FROM: LIFT STATION TO: COLLECTION CABINET</u> |
| Specification Title Section: | <u>SOLVENT SECONDARY WASTE LINE</u>                                           |
| Allowable Pressure Change:   | <u>PSIG</u><br><u>5 PSI</u>                                                   |
| Test Medium:                 | <u>AIR</u>                                                                    |
| Point of Connection:         | <u>LIFT STATION</u>                                                           |
| Point of Termination:        | <u>COLLECTION CABINET</u>                                                     |

## Test Results

| Date           | Time         |                |                | Pressure   |            | Passed          | Comments                                                                                                                             |
|----------------|--------------|----------------|----------------|------------|------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------|
|                | Start        | End            | Duration       | Start      | End        | (Yes / No)      |                                                                                                                                      |
| <u>9/23/15</u> | <u>7:00</u>  |                | <u>24 HRS.</u> | <u>6</u>   |            | <u>Yes / No</u> |                                                                                                                                      |
| <u>9/25/15</u> | <u>10:30</u> | <u>9:04 AM</u> | <u>7:30 AM</u> | <u>5.6</u> | <u>5.6</u> | <u>Yes / No</u> |                                                                                                                                      |
|                | <u>9:04</u>  | <u>11:00</u>   | <u>7:30 AM</u> | <u>5.6</u> | <u>5.6</u> | <u>Yes / No</u> |                                                                                                                                      |
|                | <u>11:02</u> | <u>11:42</u>   | <u>7:30 AM</u> | <u>5.6</u> | <u>5.6</u> | <u>Yes / No</u> | <u>Passed secondary solvent waste line from lift station to collection cabinet in 20-30 min with 5 PSI on pressure pad in 9 min.</u> |
|                |              |                |                |            |            | <u>Yes / No</u> |                                                                                                                                      |
|                |              |                |                |            |            | <u>Yes / No</u> |                                                                                                                                      |

COMMENTS: \_\_\_\_\_

Completed By: Rli Buef

Date: 9-23-15

Witnessed By: [Signature]

Date: 9/25/15



# MULTIPLE SYSTEM PRESSURE RETENTION TESTS PAGE 1 OF 1

CLIENT: ARIA / Apple CONTRACTOR: Paragon Mechanical TOOL: 1700 Gallon Solvent Waste Tank  
 TEST LOCATION: ARIA - 3250 Scott Blvd. - Santa Clara / Outside Gas Pad TEST DATE: 7/21/2017

| SYSTEM                                                                                | WORKING PRESSURE | START    |        | FINISH   |         | PASS | FAIL |
|---------------------------------------------------------------------------------------|------------------|----------|--------|----------|---------|------|------|
|                                                                                       |                  | PRESSURE | TIME   | PRESSURE | TIME    |      |      |
| 3" Secondary Line : Witnessed pressure test from SW-CC-1 to 1700 Solvent Waste Tank.  | NA               | 5psi     | 7:00am | 5psi     | 11:00am | DM   |      |
| 1" PFA Primary Line : Witnessed pressure test from SW-CC-1 to 1700 Solvent Waste Tank | NA               | 100psi   | 7:00am | 100psi   | 11:00am | DM   |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |
|                                                                                       |                  |          |        |          |         |      |      |

TYPE: PNEUMATIC  HYDROSTATIC  MEDIA Argon

TEST GAUGE: MAKE NA SERIAL # NA PSIG: NA

SENSITIVITY: NA CALIBRATION DUE DATE: NA

COMMENTS:

.....  
 .....  
 .....

TEST WITNESSED BY: Demar Mills

DATE: 7/21/2017

TEST PERFORMED BY: PARAGON MECHANICAL

DATE: 7/21/2017

# MULTIPLE SYSTEM PRESSURE RETENTION TESTS PAGE 1 OF 1

CLIENT: ARIA / Apple CONTRACTOR: Paragon Mechanical TOOL: 1700 Gallon Solvent Waste Tank  
 TEST LOCATION: ARIA - 3250 Scott Blvd. - Santa Clara / Outside Gas Pad TEST DATE: 7/21/2017

| SYSTEM                                                                                        | WORKING PRESSURE | START    |        | FINISH   |         | PASS | FAIL |
|-----------------------------------------------------------------------------------------------|------------------|----------|--------|----------|---------|------|------|
|                                                                                               |                  | PRESSURE | TIME   | PRESSURE | TIME    |      |      |
| Primary Tank : Witnessed pressure test from<br>1700 Gallon Solvent Waste Tank to Suction Line | NA               | 1.5psi   | 7:00am | 1.5psi   | 11:00am | DM   |      |
| Secondary Tank : Witnessed pressure test from<br>1700 Gallon Waste Tank to vent Line          | NA               | 1.5psi   | 7:00am | 1.5psi   | 11:00am | DM   |      |
|                                                                                               |                  |          |        |          |         |      |      |
|                                                                                               |                  |          |        |          |         |      |      |
|                                                                                               |                  |          |        |          |         |      |      |
|                                                                                               |                  |          |        |          |         |      |      |
|                                                                                               |                  |          |        |          |         |      |      |
|                                                                                               |                  |          |        |          |         |      |      |
|                                                                                               |                  |          |        |          |         |      |      |
|                                                                                               |                  |          |        |          |         |      |      |

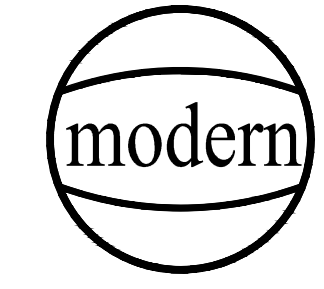

TYPE: PNEUMATIC  HYDROSTATIC  MEDIA Argon  
 TEST GAUGE: MAKE NA SERIAL # NA PSIG: NA  
 SENSITIVITY: NA CALIBRATION DUE DATE: NA

COMMENTS:  
 .....  
 .....  
 .....

TEST WITNESSED BY: Demar Mills DATE: 7/21/2017  
 TEST PERFORMED BY: PARAGON MECHANICAL DATE: 7/21/2017

ATTACHMENT 4

SOLVENT WASTE TANK (SW-TNK-2) INFORMATION

|                                                                                                                                                                                                                  |    |                   |                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------|--------------------------------------------------------------------------------------------------|
| NO. REQD.: ONE (1)                                                                                                                                                                                               |    | ITEM NO.: FG1700R |                                                                                                  |
|  <b>modern welding company of california, inc.</b><br>4141 N. BRAWLEY AVE FRESNO, CA 93722<br>PH. 559-275-9353 FAX 559-275-4381 |    |                   |                                                                                                  |
| <b>INTEGRATED ENGINEERING SERVICES</b><br><b>1,700 GALLON UL 2085 FIREGUARD TANK</b>                                                                                                                             |    |                   |                                                                                                  |
| DWN. BY                                                                                                                                                                                                          | JC | DATE 8/19/16      | SCALE: NONE                                                                                      |
| CHK. BY                                                                                                                                                                                                          |    | JOB NO.           | DWG. NO. 13826  |
| APR. BY                                                                                                                                                                                                          |    | P.O. NO.          | SHT. NO. 1 OF 1                                                                                  |

| A    | 1     | 6"   | RFSO | SPARE       |
|------|-------|------|------|-------------|
| B    | 1     | 4"   | RFSO | PUMP        |
| C    | 1     | 6"   | RFSO | VENT        |
| D    | 1     | 6"   | FFSO | SEC. E-VENT |
| E    | 1     | 6"   | FFSO | PRI. E-VENT |
| F    | 1     | 6"   | RFSO | SPARE       |
| G    | 1     | 2"   | RFSO | MONITOR     |
| H    | 1     | 6"   | RFSO | SPARE       |
| J    | 1     | 6"   | RFSO | SPARE       |
| K    | 1     | 4"   | RFSO | WASTE INLET |
| MARK | REQ'D | SIZE | TYPE | REMARKS     |

**GENERAL NOTES**  
 1) INNER & OUTER TANKS SHALL BE CONSTRUCTED PER UL-142. TANKS SHALL BEAR UL 2085 LABEL FOR "INSULATED SECONDARY CONTAINMENT ABOVEGROUND TANK FOR FLAMMABLE LIQUIDS".

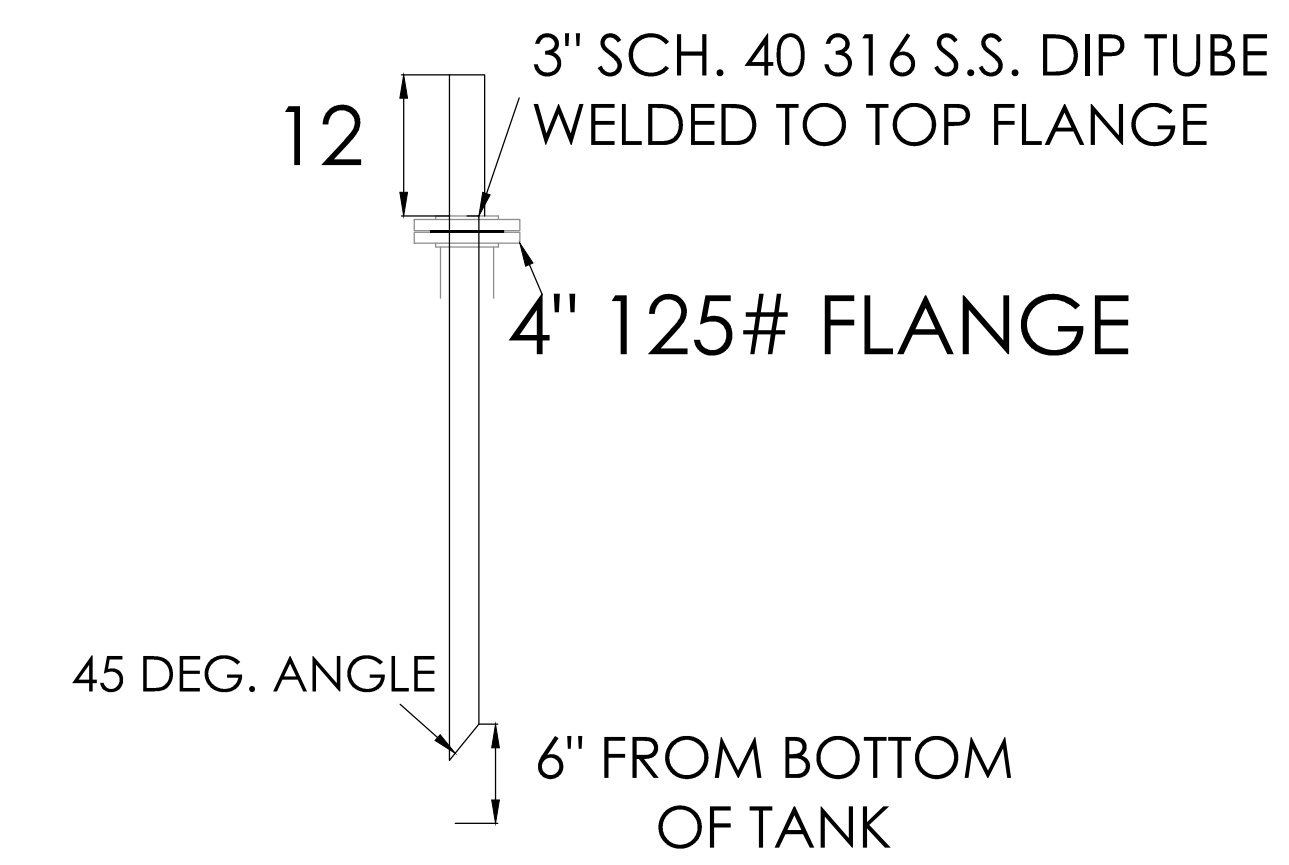
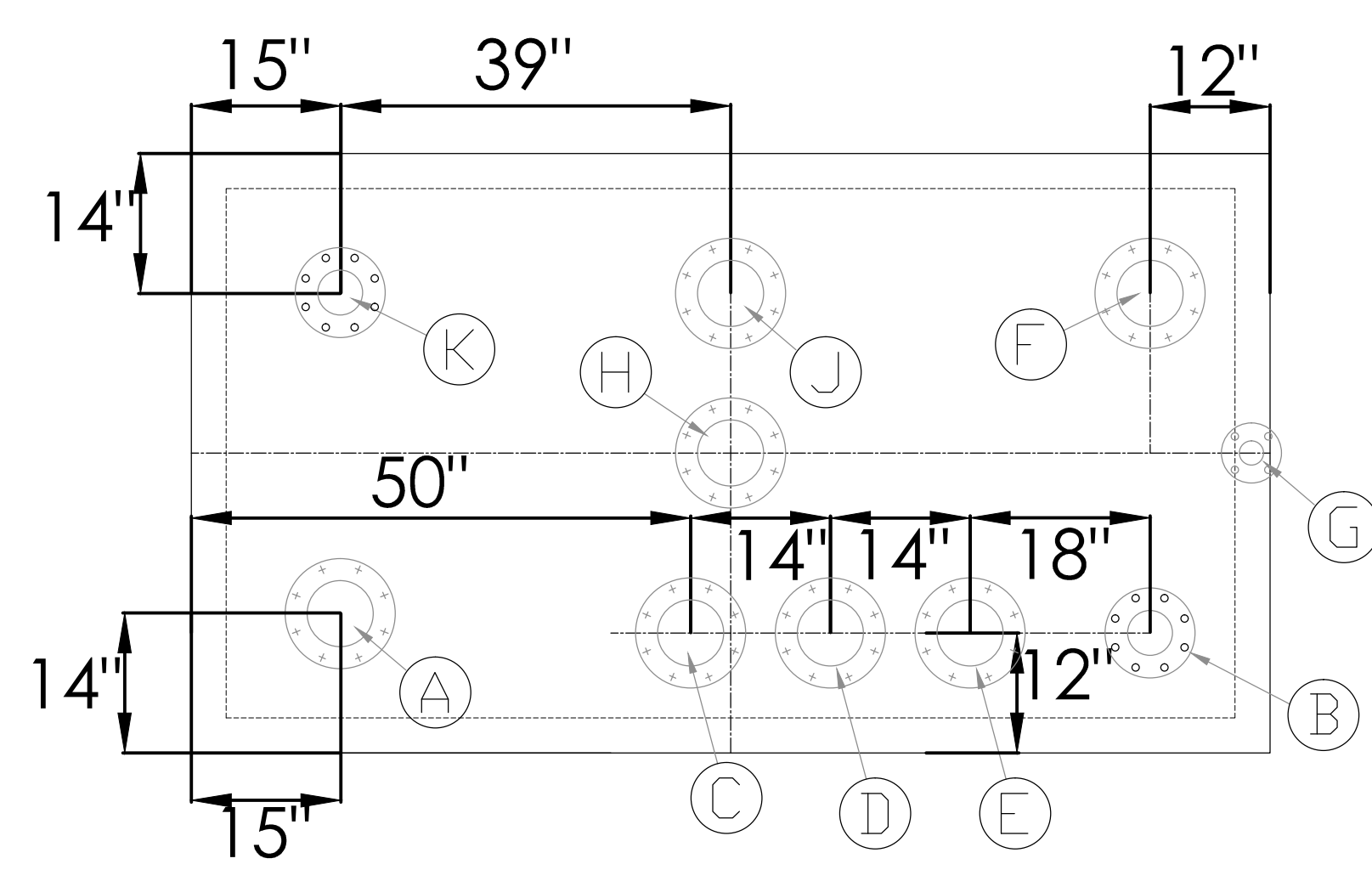
ESTIMATED EMPTY TANK WEIGHT: 9,200#

**SCHEDULE OF OPENINGS**

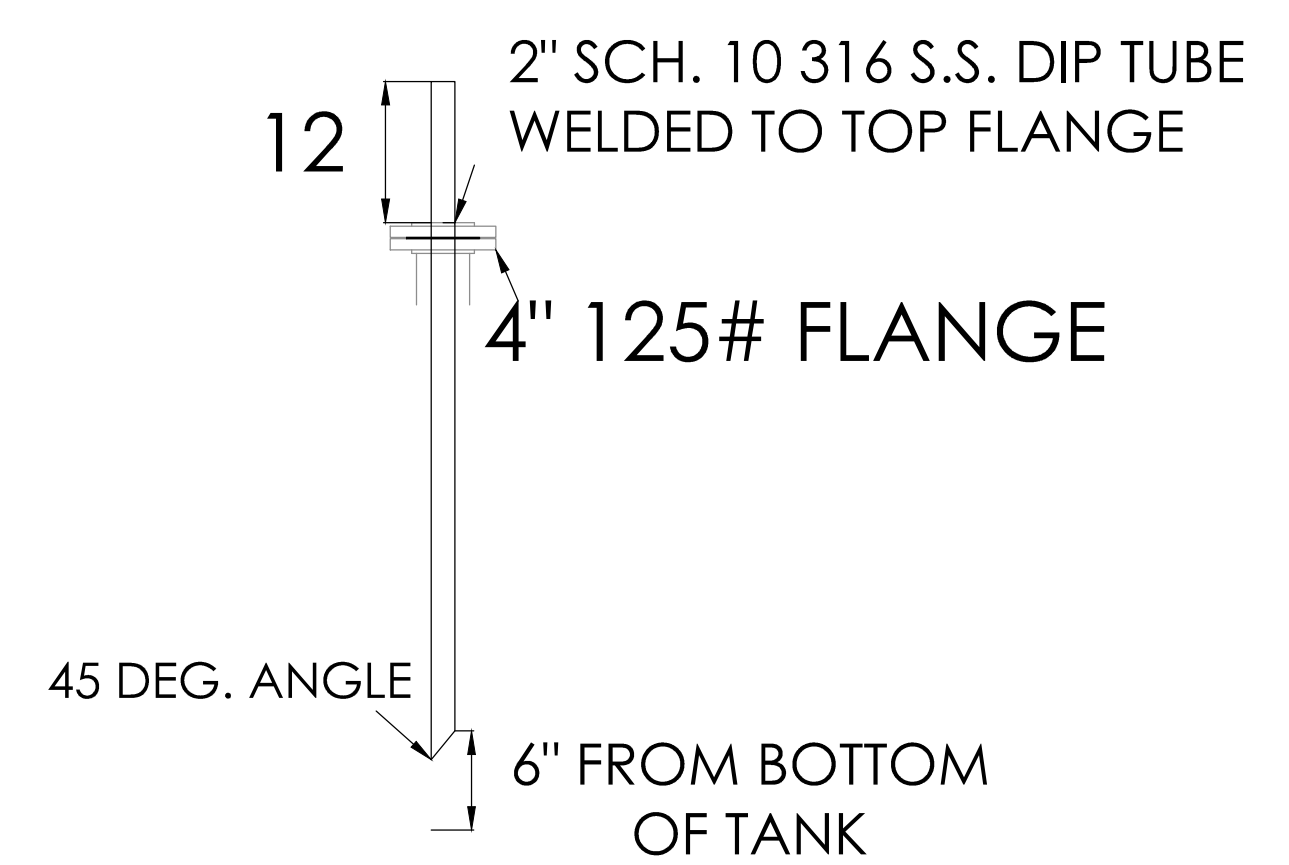
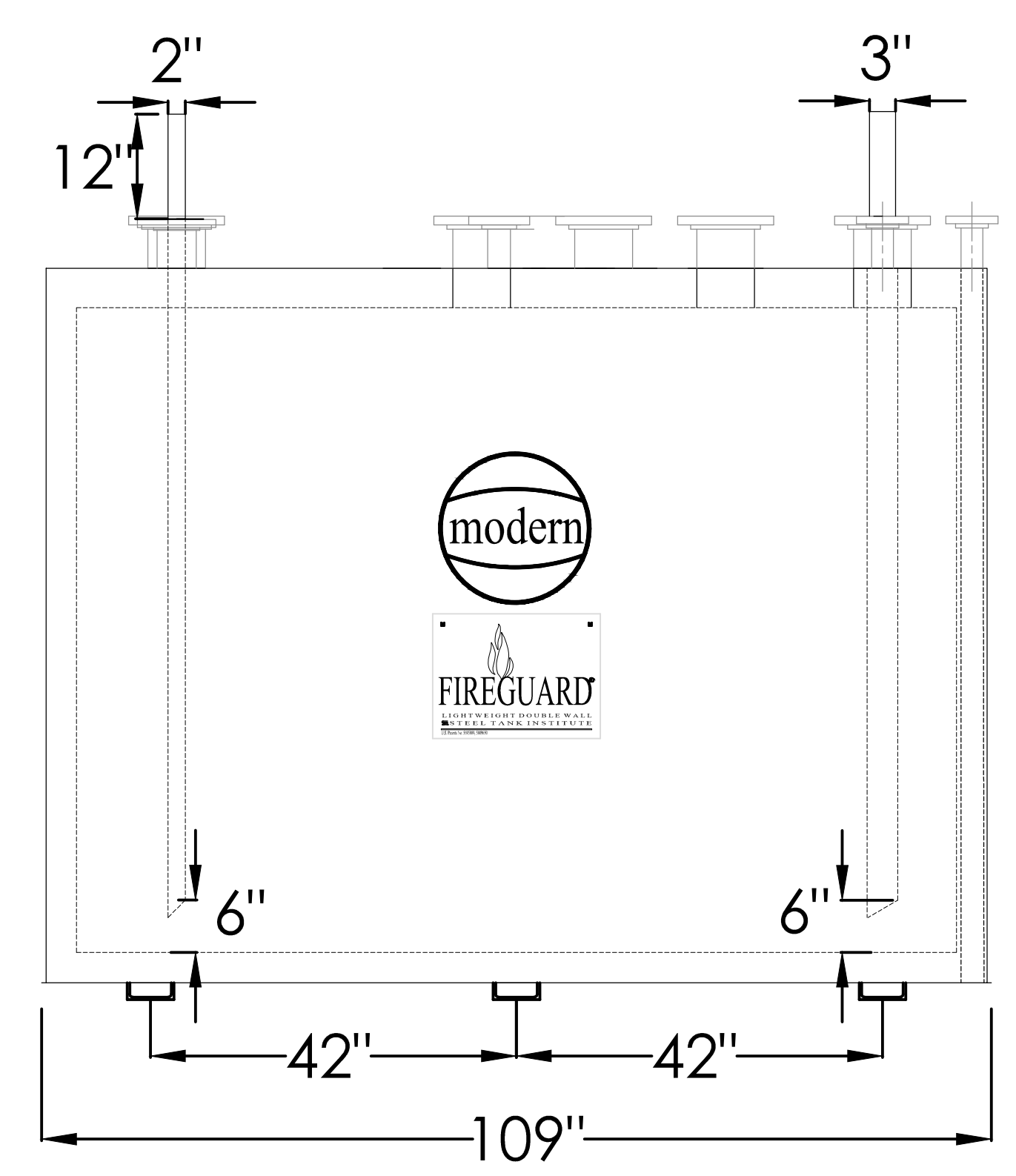
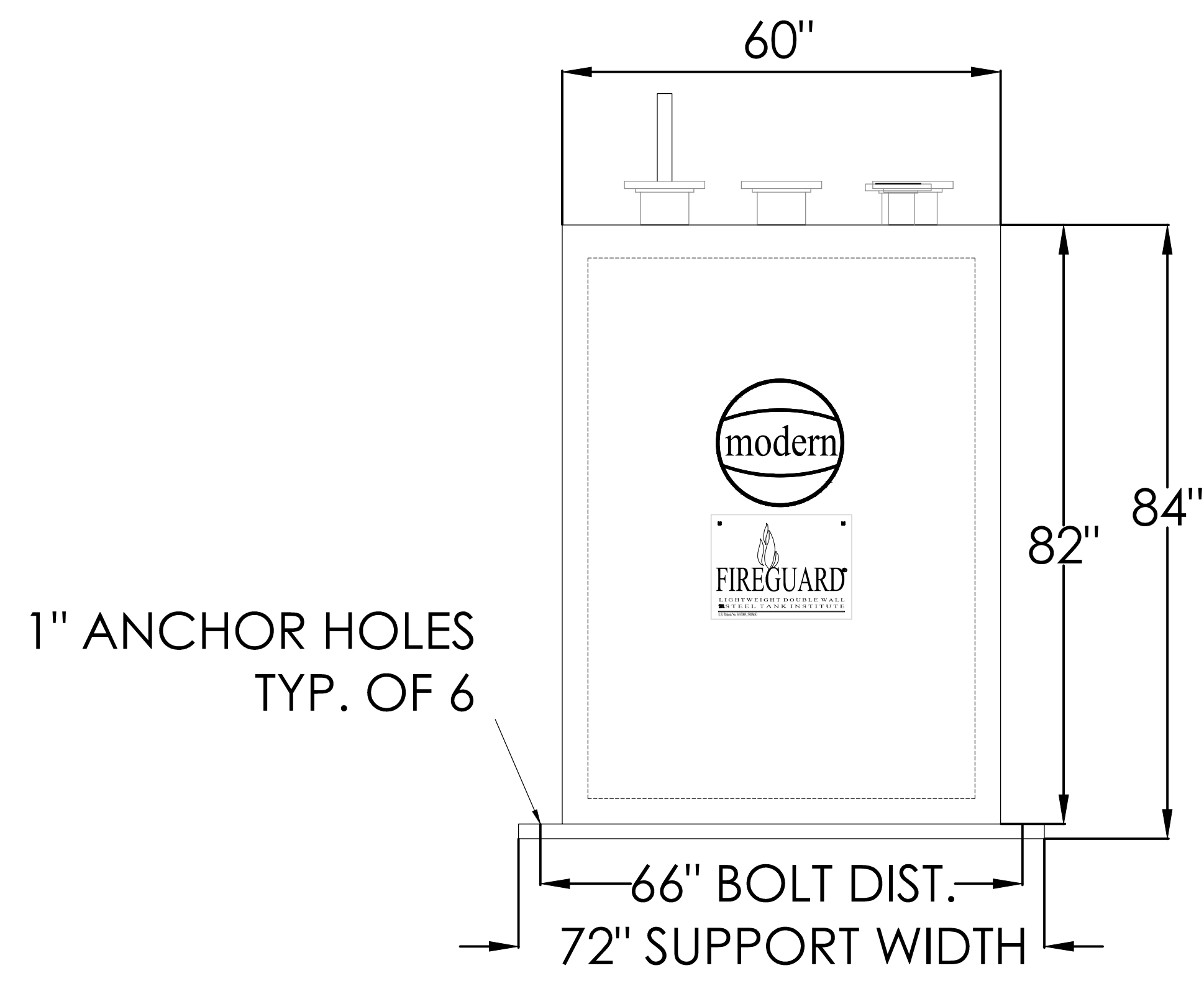
CARB EXECUTIVE ORDER VR-302-C

**PAINT NOTES**  
 INTERIOR: BARE, CLEAN OF DEBRIS  
 EXTERIOR: WHITE POLYURETHANE

NOTE: PRIMARY TANK AND OPENINGS OF 316L STAINLESS STEEL



FITTING "B" DETAIL



FITTING "K" DETAIL

50:

57

AP15168

Please print or type.

|                                  |                                        |                |                                             |                                              |
|----------------------------------|----------------------------------------|----------------|---------------------------------------------|----------------------------------------------|
| UNIFORM HAZARDOUS WASTE MANIFEST | 1. Generator ID Number<br>CAR000278176 | 2. Page 1 of 1 | 3. Emergency Response Phone<br>888-785-7225 | 4. Manifest Tracking Number<br>014565900 FLE |
|----------------------------------|----------------------------------------|----------------|---------------------------------------------|----------------------------------------------|

|                                                                                                                                    |                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 5. Generator's Name and Mailing Address<br>Apple, Inc.<br>One Apple Park Way M/S 319-5E&S<br>Cupertino, CA 95014<br>(408) 595-6513 | Generator's Site Address (if different than mailing address)<br>Apple, Inc.<br>3250 Scott Blvd., Suite 100<br>Santa Clara, CA 95054 |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                 |                                    |
|---------------------------------------------------------------------------------|------------------------------------|
| 6. Transporter 1 Company Name<br>Advanced Chemical Transport Inc./DBA ACTenviro | U.S. EPA ID Number<br>CAR000070540 |
|---------------------------------------------------------------------------------|------------------------------------|

|                                                              |                                    |
|--------------------------------------------------------------|------------------------------------|
| 7. Transporter 2 Company Name<br>Clean Harbors Environmental | U.S. EPA ID Number<br>MAD039322250 |
|--------------------------------------------------------------|------------------------------------|

|                                                                                                                                                              |                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 8. Designated Facility Name and Site Address<br>Clean Harbors Aragonite, LLC<br>11600 N. Actus Road<br>Aragonite, UT 84029<br>Facility's Phone: 435-894-8100 | U.S. EPA ID Number<br>UTD981552177 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|

| 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers |      | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes |  |  |
|--------|----------------------------------------------------------------------------------------------------------------|----------------|------|--------------------|-------------------|-----------------|--|--|
|        |                                                                                                                | No.            | Type |                    |                   |                 |  |  |
|        | 1. Non-RCRA Hazardous Waste Solid (Activated Carbon)                                                           | 03             | CF   | 630                | P                 | 331             |  |  |
|        | 2.                                                                                                             |                |      |                    |                   |                 |  |  |
|        | 3.                                                                                                             |                |      |                    |                   |                 |  |  |
|        | 4.                                                                                                             |                |      |                    |                   |                 |  |  |

|                                                                                                  |                       |                     |
|--------------------------------------------------------------------------------------------------|-----------------------|---------------------|
| 14. Special Handling Instructions and Additional Information<br>1) CH1886605 APC 001-003 (3X4 B) | Project Number 273002 | Document #: D330248 |
|--------------------------------------------------------------------------------------------------|-----------------------|---------------------|

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

|                                                                                            |                                |
|--------------------------------------------------------------------------------------------|--------------------------------|
| Generator's/Offeror's Printed/Typed Name<br>ON BEHALF OF APPLE INC - Signature<br>Chm Loya | Month Day Year<br>12   14   20 |
|--------------------------------------------------------------------------------------------|--------------------------------|

|                                                                                                                  |                                                |
|------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 16. International Shipments<br><input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. | Port of entry (if U.S.):<br>Date leaving U.S.: |
|------------------------------------------------------------------------------------------------------------------|------------------------------------------------|

|                                                        |             |                |
|--------------------------------------------------------|-------------|----------------|
| 17. Transporter Acknowledgment of Receipt of Materials | Signature   | Month Day Year |
| Transporter 1 Printed/Typed Name<br>Chm Loya           | [Signature] | 12   14   20   |
| Transporter 2 Printed/Typed Name<br>David Baker        | [Signature] | 12   18   20   |

|                                        |                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18. Discrepancy                        | 18a. Discrepancy Indication Space<br><input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection |
| 18b. Alternate Facility (or Generator) | Manifest Reference Number:<br>U.S. EPA ID Number:                                                                                                                                                                        |

|                                                                                                                                 |                |
|---------------------------------------------------------------------------------------------------------------------------------|----------------|
| 18c. Signature of Alternate Facility (or Generator)                                                                             | Month Day Year |
| 19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) |                |
| 1. H040                                                                                                                         | 2. 3. 4.       |

|                                                                                                                                                |             |                |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|
| 20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a | Signature   | Month Day Year |
| Printed/Typed Name<br>Mike Carenty                                                                                                             | [Signature] | 11   18   21   |

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

012000278176

22. Page

23. Manifest Tracking Number

2/2 014565900 FL2

Generator's Name

Apple Inc

one Appleway Cupertino CA 95014

Transporter

Company Name

TRI State Motor Transit Co

U.S. EPA ID Number

1100 091-038-998

U.S. EPA ID Number

7a. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))

27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))

28. Containers

No.

Type

29. Total Quantity

30. Unit Wt/Vol

31. Waste Codes

TPD

32. Special Handling Instructions and Additional Information

33. Transporter Acknowledgment of Receipt of Materials

Printed/Typed Name

Raymond Begay

Signature

[Signature]

Month

Day

Year

01 08 21

34. Transporter Acknowledgment of Receipt of Materials

Printed/Typed Name

Signature

Month

Day

Year

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

API5168

SO# 2105894546

Form Approved. OMB No. 2050-0039

Please print or type.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------|-------------------|-----------------|--|
| UNIFORM HAZARDOUS WASTE MANIFEST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        | 1. Generator ID Number<br>CAR000278176                                                                         | 2. Page 1 of<br>1 | 3. Emergency Response Phone<br>888-785-7225                                                                                          | 4. Manifest Tracking Number<br>015769563 FLE |                                                  |                   |                 |  |
| 5. Generator's Name and Mailing Address<br>Apple, Inc.<br>One Apple Park Way M/S 319-SEH&S<br>Cupertino, CA 95014<br>Generator's Phone: (408) 595-6513                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                                                                                                |                   | Generator's Site Address (if different than mailing address):<br>Apple, Inc.<br>3250 Scott Blvd., Suite 100<br>Santa Clara, CA 95054 |                                              |                                                  |                   |                 |  |
| 6. Transporter 1 Company Name<br>Advanced Chemical Transport Inc./DBA ACTermite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                |                   | U.S. EPA ID Number<br>CAR000070540                                                                                                   |                                              |                                                  |                   |                 |  |
| 7. Transporter 2 Company Name<br>CLEAN HARBORS ENVIRONMENTAL SERVICES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |                                                                                                                |                   | U.S. EPA ID Number<br>MAD03932250                                                                                                    |                                              |                                                  |                   |                 |  |
| 8. Designated Facility Name and Site Address<br>Clean Harbors Aragonite, LLC<br>11600 N. Aplus Road<br>Aragonite, UT 84029<br>Facility's Phone: 435-884-8100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                                                                                                |                   | U.S. EPA ID Number<br>UTD981552177                                                                                                   |                                              |                                                  |                   |                 |  |
| GENERATOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) |                   | 10. Containers<br>No. Type                                                                                                           |                                              | 11. Total Quantity                               | 12. Unit Wt./Vol. | 13. Waste Codes |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 1. Non-RCRA Hazardous Waste, Solid, (Activated Carbon)                                                         |                   | 02 CF                                                                                                                                |                                              | 980                                              | P                 | 331             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 2.                                                                                                             |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 3.                                                                                                             |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 4.                                                                                                             |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| 14. Special Handling Instructions and Additional Information<br>Project Number 324405 Document #: D385233<br>1) CH1986805 APC-101-102 (2XCYB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| 15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true. |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| Generator's/Officer's Printed/Typed Name<br>On behalf of APPLE INC<br>Omer Lopez                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |                                                                                                                |                   | Signature<br>                                                                                                                        |                                              | Month Day Year<br>11 05 21                       |                   |                 |  |
| 16. International Shipments<br><input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| 17. Transporter Acknowledgment of Receipt of Materials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| Transporter 1 Printed/Typed Name<br>Omer Lopez                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |                                                                                                                |                   | Signature<br>                                                                                                                        |                                              | Month Day Year<br>11 05 21                       |                   |                 |  |
| Transporter 2 Printed/Typed Name<br>ROBERT PURLES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |                                                                                                                |                   | Signature<br>                                                                                                                        |                                              | Month Day Year<br>11 19 21                       |                   |                 |  |
| 18. Discrepancy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| 18a. Discrepancy Indication Space<br><input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| 18b. Alternate Facility (or Generator)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                                                                                                |                   |                                                                                                                                      |                                              | Manifest Reference Number:<br>U.S. EPA ID Number |                   |                 |  |
| 18c. Signature of Alternate Facility (or Generator)<br>Month Day Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| 19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| 1. H040                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 2.                                                                                                             |                   | 3.                                                                                                                                   |                                              | 4.                                               |                   |                 |  |
| 20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |                                                                                                                |                   |                                                                                                                                      |                                              |                                                  |                   |                 |  |
| Printed/Typed Name<br>Natasha Johansen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                                                                                                |                   | Signature<br>                                                                                                                        |                                              | Month Day Year<br>12 16 21                       |                   |                 |  |





Please print or type.

SO# 2107194571

AP15168

Form Approved. OMB No. 2050-0039

| UNIFORM HAZARDOUS WASTE MANIFEST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                | 1. Generator ID Number<br>CAR000278176 | 2. Page 1 of 1 | 3. Emergency Response Phone<br>888-785-7225                                                                                         | 4. Manifest Tracking Number<br>015769825 FLE |                            |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------|--|
| 5. Generator's Name and Mailing Address<br>Apple, Inc.<br>One Apple Park Way M/S 319-5EH&S<br>Cupertino, CA 95014<br>Generator's Phone: (408) 595-6513                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                |                                        |                | Generator's Site Address (if different than mailing address)<br>Apple, Inc.<br>3250 Scott Blvd., Suite 100<br>Santa Clara, CA 95054 |                                              |                            |  |
| 6. Transporter 1 Company Name<br>Advanced Chemical Transport Inc./DBA ACTemiro                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        |                | U.S. EPA ID Number<br>CAR000070540                                                                                                  |                                              |                            |  |
| 7. Transporter 2 Company Name<br>Clean Harbors Environmental Services                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                |                                        |                | U.S. EPA ID Number<br>MAD039322250                                                                                                  |                                              |                            |  |
| 8. Designated Facility Name and Site Address<br>Clean Harbors Aragonite, LLC<br>11600 N. Aplus Road<br>Aragonite, UT 84029<br>Facility's Phone: 435-884-8100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                |                                        |                | U.S. EPA ID Number<br>UTD961552177                                                                                                  |                                              |                            |  |
| 9a. HM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers                         |                | 11. Total Quantity                                                                                                                  | 12. Unit Wt./Vol.                            | 13. Waste Codes            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                | No.                                    | Type           |                                                                                                                                     |                                              |                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1. NON-RCRA HAZARDOUS WASTE, SOLID, (ACTIVATED CARBON)                                                         | 01                                     | DM             | 420                                                                                                                                 | P                                            | 331                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2.                                                                                                             |                                        |                |                                                                                                                                     |                                              |                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3.                                                                                                             |                                        |                |                                                                                                                                     |                                              |                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.                                                                                                             |                                        |                |                                                                                                                                     |                                              |                            |  |
| 14. Special Handling Instructions and Additional Information<br>Project Number 338479 Document #: D412993<br>1) CH1986187 APC 201 (1 X 55 OTM INSIDE 85 DM OVER PALET)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| 15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true. |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| Generator's/Offeror's Printed/Typed Name<br>ON BEHALF OF APPLE INC<br>Omar Loya                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                |                                        |                | Signature<br>                                                                                                                       |                                              | Month Day Year<br>02/02/22 |  |
| 16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| 17. Transporter Acknowledgment of Receipt of Materials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| Transporter 1 Printed/Typed Name<br>Omar Loya                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                |                                        |                | Signature<br>                                                                                                                       |                                              | Month Day Year<br>02/02/22 |  |
| Transporter 2 Printed/Typed Name<br>David Baker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                |                                        |                | Signature<br>                                                                                                                       |                                              | Month Day Year<br>02/08/22 |  |
| 18. Discrepancy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| Manifest Reference Number:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| 18b. Alternate Facility (or Generator)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                |                                        |                | U.S. EPA ID Number                                                                                                                  |                                              |                            |  |
| Facility's Phone:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| 18c. Signature of Alternate Facility (or Generator)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                |                                        |                |                                                                                                                                     |                                              | Month Day Year             |  |
| 19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| 1. H040                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                | 2.                                     |                | 3.                                                                                                                                  |                                              | 4.                         |  |
| 20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        |                |                                                                                                                                     |                                              |                            |  |
| Printed/Typed Name<br>Kelli Brankham                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                |                                        |                | Signature<br>KBrankham                                                                                                              |                                              | Month Day Year<br>12/15/22 |  |

| <b>UNIFORM HAZARDOUS WASTE MANIFEST</b><br>(Continuation Sheet)                                                                 |                                                                                                                 | 21. Generator ID Number<br><i>CAE 000278176</i> | 22. Page<br><i>2/2</i> | 23. Manifest Tracking Number<br><i>015769825 FILE</i> |                   |                   |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------|-------------------------------------------------------|-------------------|-------------------|
| 24. Generator's Name<br><i>Apple, Inc</i>                                                                                       |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
| 25. Transporter <i>7</i> Company Name<br><i>TriState Motor Transit Co</i>                                                       |                                                                                                                 |                                                 |                        | U.S. EPA ID Number<br><i>M100095038998</i>            |                   |                   |
| 26. Transporter _____ Company Name                                                                                              |                                                                                                                 |                                                 |                        | U.S. EPA ID Number                                    |                   |                   |
| 27a.<br>HM                                                                                                                      | 27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 28. Containers                                  |                        | 29. Total Quantity                                    | 30. Unit Wt./Vol. | 31. Waste Codes   |
|                                                                                                                                 |                                                                                                                 | No.                                             | Type                   |                                                       |                   |                   |
|                                                                                                                                 | <i>TPD</i>                                                                                                      |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
|                                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
| 32. Special Handling Instructions and Additional Information                                                                    |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
| 33. Transporter <i>7</i> Acknowledgment of Receipt of Materials                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
| Printed/Typed Name<br><i>Jubian Ruda</i>                                                                                        |                                                                                                                 | Signature<br><i>[Signature]</i>                 |                        | Month<br><i>2</i>                                     | Day<br><i>14</i>  | Year<br><i>22</i> |
| 34. Transporter Acknowledgment of Receipt of Materials                                                                          |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
| Printed/Typed Name                                                                                                              |                                                                                                                 | Signature                                       |                        | Month                                                 | Day               | Year              |
| 35. Discrepancy                                                                                                                 |                                                                                                                 |                                                 |                        |                                                       |                   |                   |
| 36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) |                                                                                                                 |                                                 |                        |                                                       |                   |                   |

GENERATOR

TRANSPORTER

DESIGNATED FACILITY



# WASTE MATERIAL PROFILE SHEET

## Clean Harbors Profile No. CH1505500

### A. GENERAL INFORMATION

GENERATOR EPA ID #/REGISTRATION # **CAR000278176** GENERATOR NAME: **Apple inc.**  
 GENERATOR CODE (Assigned by Clean Harbors) **AP15168** CITY **Santa Clara** STATE/PROVINCE **CA** ZIP/POSTAL CODE **95054**  
 ADDRESS **3250 Scott Blvd** PHONE: **(408) 206-5377**  
 CUSTOMER CODE (Assigned by Clean Harbors) **AC20127** CUSTOMER NAME: **ACT Environmental Services - Apple Inc**  
 ADDRESS **1210 Elko Drive** CITY **Sunnyvale** STATE/PROVINCE **CA** ZIP/POSTAL CODE **94089**

### B. WASTE DESCRIPTION

WASTE DESCRIPTION: **Mixed Flammable Liquids**

PROCESS GENERATING WASTE: **PROCESS USING SOLVENT in**

IS THIS WASTE CONTAINED IN SMALL PACKAGING CONTAINED WITHIN A LARGER SHIPPING CONTAINER? **No**

### C. PHYSICAL PROPERTIES (at 25C or 77F)

#### PHYSICAL STATE

- SOLID WITHOUT FREE LIQUID
- POWDER
- MONOLITHIC SOLID
- LIQUID WITH NO SOLIDS
- LIQUID/SOLID MIXTURE
- % FREE LIQUID
- % SETTLED SOLID
- % TOTAL SUSPENDED SOLID
- SLUDGE
- GAS/AEROSOL

| NUMBER OF PHASES/LAYERS             |        |                                     |              |     |             |             |
|-------------------------------------|--------|-------------------------------------|--------------|-----|-------------|-------------|
| <input checked="" type="checkbox"/> | 1      | 2                                   | 3            | TOP | <b>0.00</b> |             |
| % BY VOLUME (Approx.)               |        |                                     |              |     | MIDDLE      | <b>0.00</b> |
|                                     |        |                                     |              |     | BOTTOM      | <b>0.00</b> |
| ODOR                                |        | BOILING POINT °F (°C)               |              |     |             |             |
| <input checked="" type="checkbox"/> | NONE   | <= 95 (<=35)                        |              |     |             |             |
| <input checked="" type="checkbox"/> | MILD   | 95 - 100 (35-38)                    |              |     |             |             |
| <input type="checkbox"/>            | STRONG | 101 - 129 (38-54)                   |              |     |             |             |
| Describe:                           |        | <input checked="" type="checkbox"/> | >= 130 (>54) |     |             |             |

#### VISCOSITY (If liquid present)

- 1 - 100 (e.g. Water)
- 101 - 500 (e.g. Motor Oil)
- 501 - 10,000 (e.g. Molasses)
- > 10,000

#### COLOR

**VARIES**

#### MELTING POINT °F (°C)

- < 140 (<60)
- 140-200 (60-93)
- > 200 (>93)

#### TOTAL ORGANIC CARBON

- <= 1%
- 1-9%
- >= 10%

#### FLASH POINT °F (°C)

- < 73 (<23)
- 73 - 100 (23-38)
- 101 - 140 (38-60)
- 141 - 200 (60-93)
- > 200 (>93)

#### pH

- <= 2
- 2.1 - 6.9
- 7 (Neutral)
- 7.1 - 12.4
- >= 12.5

#### SPECIFIC GRAVITY

- < 0.8 (e.g. Gasoline)
- 0.8-1.0 (e.g. Ethanol)
- 1.0 (e.g. Water)
- 1.0-1.2 (e.g. Antifreeze)
- > 1.2 (e.g. Methylene Chloride)

#### ASH

- < 0.1
- 0.1 - 1.0
- 1.1 - 5.0
- 5.1 - 20.0

#### BTU/LB (MJ/kg)

- < 2,000 (<4.6)
- 2,000-5,000 (4.6-11.6)
- 5,000-10,000 (11.6-23.2)
- > 10,000 (>23.2)

Actual:

**D. COMPOSITION** (List the complete composition of the waste, include any inert components and/or debris. Ranges for individual components are acceptable. If a trade name is used, please supply an MSDS. Please do not use abbreviations.)

#### CHEMICAL

- 1-METHYL-2-PYRROLIDONE**
- ACETONE**
- BUTYL ACETATE**
- DIMETHYL SULFOXIDE**
- GLYCOL ETHER**
- HYDROXYLAMINE RESINS**
- ISOPROPYL ALCOHOL**
- METHANOL**
- N-METHYL PYRROLIDONE**
- PGMEA**

|                        | MIN        | -- | MAX        | UOM |
|------------------------|------------|----|------------|-----|
| 1-METHYL-2-PYRROLIDONE | 10.0000000 | -- | 20.0000000 | %   |
| ACETONE                | 1.0000000  | -- | 2.0000000  | %   |
| BUTYL ACETATE          | 1.0000000  | -- | 2.0000000  | %   |
| DIMETHYL SULFOXIDE     | 0.0000000  | -- | 2.0000000  | %   |
| GLYCOL ETHER           | 1.0000000  | -- | 2.0000000  | %   |
| HYDROXYLAMINE RESINS   | 0.0000000  | -- | 1.0000000  | %   |
| ISOPROPYL ALCOHOL      | 20.0000000 | -- | 40.0000000 | %   |
| METHANOL               | 0.0000000  | -- | 0.5000000  | %   |
| N-METHYL PYRROLIDONE   | 15.0000000 | -- | 15.0000000 | %   |
| PGMEA                  | 1.0000000  | -- | 2.0000000  | %   |

DOES THIS WASTE CONTAIN ANY HEAVY GAUGE METAL DEBRIS OR OTHER LARGE OBJECTS (EX., METAL PLATE OR PIPING >1/4" THICK OR >12" LONG, METAL REINFORCED HOSE >12" LONG, METAL WIRE >12" LONG, METAL VALVES, PIPE FITTINGS, CONCRETE REINFORCING BAR OR PIECES OF CONCRETE >3")? **YES** **NO**

If yes, describe, including dimensions:

DOES THIS WASTE CONTAIN ANY METALS IN POWDERED OR OTHER FINELY DIVIDED FORM? **YES**  **NO**

DOES THIS WASTE CONTAIN OR HAS IT CONTACTED ANY OF THE FOLLOWING; ANIMAL WASTES, HUMAN BLOOD, BLOOD PRODUCTS, BODY FLUIDS, MICROBIOLOGICAL WASTE, PATHOLOGICAL WASTE, HUMAN OR ANIMAL DERIVED SERUMS OR PROTEINS OR ANY OTHER POTENTIALLY INFECTIOUS MATERIAL? **YES**  **NO**

I acknowledge that this waste material is neither infectious nor does it contain any organism known to be a threat to human health. This certification is based on my knowledge of the material. Select the answer below that applies:

The waste was never exposed to potentially infectious material. **YES** **NO**

Chemical disinfection or some other form of sterilization has been applied to the waste. **YES** **NO**

I ACKNOWLEDGE THAT THIS PROFILE MEETS THE CLEAN HARBORS BATTERY PACKAGING REQUIREMENTS. **YES** **NO**

I ACKNOWLEDGE THAT MY FRIABLE ASBESTOS WASTE IS DOUBLE BAGGED AND WETTED. **YES** **NO**

SPECIFY THE SOURCE CODE ASSOCIATED WITH THE WASTE.

**G02**

SPECIFY THE FORM CODE ASSOCIATED WITH THE WASTE.

**W219**

**E. CONSTITUENTS**

Are these values based on testing or knowledge?  Knowledge  Testing

If based on knowledge, please describe in detail, the rationale applied to identify and characterize the waste material. Please include reference to Material Safety Data Sheets (MSDS) when applicable. Include the chemical or trade-name represented by the MSDS, and or detailed process or operating procedures which generate the waste.

Process knowledge of laboratory operations

Please indicate which constituents below apply. Concentrations must be entered when applicable to assist in accurate review and expedited approval of your waste profile. Please note that the total regulated metals and other constituents sections require answers.

| RCRA                             | REGULATED METALS             | REGULATORY LEVEL (mg/l) | TCLP mg/l                 | TOTAL            | UOM | NOT APPLICABLE                      |
|----------------------------------|------------------------------|-------------------------|---------------------------|------------------|-----|-------------------------------------|
| D004                             | ARSENIC                      | 5.0                     |                           |                  |     | <input checked="" type="checkbox"/> |
| D005                             | BARIUM                       | 100.0                   |                           |                  |     | <input checked="" type="checkbox"/> |
| D006                             | CADMIUM                      | 1.0                     |                           |                  |     | <input checked="" type="checkbox"/> |
| D007                             | CHROMIUM                     | 5.0                     |                           |                  |     | <input checked="" type="checkbox"/> |
| D008                             | LEAD                         | 5.0                     |                           |                  |     | <input checked="" type="checkbox"/> |
| D009                             | MERCURY                      | 0.2                     |                           |                  |     | <input checked="" type="checkbox"/> |
| D010                             | SELENIUM                     | 1.0                     |                           |                  |     | <input checked="" type="checkbox"/> |
| D011                             | SILVER                       | 5.0                     |                           |                  |     | <input checked="" type="checkbox"/> |
| <b>VOLATILE COMPOUNDS</b>        |                              |                         | <b>OTHER CONSTITUENTS</b> |                  |     |                                     |
| D018                             | BENZENE                      | 0.5                     |                           |                  |     | <input checked="" type="checkbox"/> |
| D019                             | CARBON TETRACHLORIDE         | 0.5                     |                           | BROMINE          |     | <input checked="" type="checkbox"/> |
| D021                             | CHLOROBENZENE                | 100.0                   |                           | CHLORINE         |     | <input checked="" type="checkbox"/> |
| D022                             | CHLOROFORM                   | 6.0                     |                           | FLUORINE         |     | <input checked="" type="checkbox"/> |
| D028                             | 1,2-DICHLOROETHANE           | 0.5                     |                           | IODINE           |     | <input checked="" type="checkbox"/> |
| D029                             | 1,1-DICHLOROETHYLENE         | 0.7                     |                           | SULFUR           |     | <input checked="" type="checkbox"/> |
| D035                             | METHYL ETHYL KETONE          | 200.0                   |                           | POTASSIUM        |     | <input checked="" type="checkbox"/> |
| D039                             | TETRACHLOROETHYLENE          | 0.7                     |                           | SODIUM           |     | <input checked="" type="checkbox"/> |
| D040                             | TRICHLOROETHYLENE            | 0.5                     |                           | AMMONIA          |     | <input checked="" type="checkbox"/> |
| D043                             | VINYL CHLORIDE               | 0.2                     |                           | CYANIDE AMENABLE |     | <input checked="" type="checkbox"/> |
| <b>SEMI-VOLATILE COMPOUNDS</b>   |                              |                         | CYANIDE REACTIVE          |                  |     |                                     |
| D023                             | o-CRESOL                     | 200.0                   |                           | CYANIDE TOTAL    |     | <input checked="" type="checkbox"/> |
| D024                             | m-CRESOL                     | 200.0                   |                           | SULFIDE REACTIVE |     | <input checked="" type="checkbox"/> |
| D025                             | p-CRESOL                     | 200.0                   |                           |                  |     |                                     |
| D026                             | CRESOL (TOTAL)               | 200.0                   |                           |                  |     |                                     |
| D027                             | 1,4-DICHLOROBENZENE          | 7.5                     |                           |                  |     |                                     |
| D030                             | 2,4-DINITROTOLUENE           | 0.13                    |                           |                  |     |                                     |
| D032                             | HEXACHLOROBENZENE            | 0.13                    |                           |                  |     |                                     |
| D033                             | HEXACHLOROBUTADIENE          | 0.5                     |                           |                  |     |                                     |
| D034                             | HEXACHLOROETHANE             | 3.0                     |                           |                  |     |                                     |
| D036                             | NITROBENZENE                 | 2.0                     |                           |                  |     |                                     |
| D037                             | PENTACHLOROPHENOL            | 100.0                   |                           |                  |     |                                     |
| D038                             | PYRIDINE                     | 5.0                     |                           |                  |     |                                     |
| D041                             | 2,4,5-TRICHLOROPHENOL        | 400.0                   |                           |                  |     |                                     |
| D042                             | 2,4,6-TRICHLOROPHENOL        | 2.0                     |                           |                  |     |                                     |
| <b>PESTICIDES AND HERBICIDES</b> |                              |                         |                           |                  |     |                                     |
| D012                             | ENDRIN                       | 0.02                    |                           |                  |     |                                     |
| D013                             | LINDANE                      | 0.4                     |                           |                  |     |                                     |
| D014                             | METHOXYCHLOR                 | 10.0                    |                           |                  |     |                                     |
| D015                             | TOXAPHENE                    | 0.5                     |                           |                  |     |                                     |
| D016                             | 2,4-D                        | 10.0                    |                           |                  |     |                                     |
| D017                             | 2,4,5-TP (SILVEX)            | 1.0                     |                           |                  |     |                                     |
| D020                             | CHLORDANE                    | 0.03                    |                           |                  |     |                                     |
| D031                             | HEPTACHLOR (AND ITS EPOXIDE) | 0.008                   |                           |                  |     |                                     |

| HOCs                                                            | PCBs                                     |
|-----------------------------------------------------------------|------------------------------------------|
| <input checked="" type="checkbox"/> NONE                        | <input checked="" type="checkbox"/> NONE |
| <input type="checkbox"/> < 1000 PPM                             | <input type="checkbox"/> < 50 PPM        |
| <input type="checkbox"/> >= 1000 PPM                            | <input type="checkbox"/> >=50 PPM        |
| IF PCBs ARE PRESENT, IS THE WASTE REGULATED BY TSCA 40 CFR 761? |                                          |
| YES                                                             | <input checked="" type="checkbox"/> NO   |

**ADDITIONAL HAZARDS**  
 DOES THIS WASTE HAVE ANY UNDISCLOSED HAZARDS OR PRIOR INCIDENTS ASSOCIATED WITH IT, WHICH COULD AFFECT THE WAY IT SHOULD BE HANDLED?  
 YES  NO (If yes, explain) Exposure to TMAH

**CHOOSE ALL THAT APPLY**

- |                                                   |                                      |                                            |                                                       |
|---------------------------------------------------|--------------------------------------|--------------------------------------------|-------------------------------------------------------|
| <input type="checkbox"/> DEA REGULATED SUBSTANCES | <input type="checkbox"/> EXPLOSIVE   | <input type="checkbox"/> FUMING            | <input type="checkbox"/> OSHA REGULATED CARCINOGENS   |
| <input type="checkbox"/> POLYMERIZABLE            | <input type="checkbox"/> RADIOACTIVE | <input type="checkbox"/> REACTIVE MATERIAL | <input checked="" type="checkbox"/> NONE OF THE ABOVE |

**F. REGULATORY STATUS**

YES    NO    USEPA HAZARDOUS WASTE?  
D001 F003

YES    NO    DO ANY STATE WASTE CODES APPLY?  
135 214  
 Texas Waste Code    OUTS219H

YES     NO    DO ANY CANADIAN PROVINCIAL WASTE CODES APPLY?

YES    NO    IS THIS WASTE PROHIBITED FROM LAND DISPOSAL WITHOUT FURTHER TREATMENT PER 40 CFR PART 268?  
 LDR CATEGORY:    This is subject to LDR.  
 VARIANCE INFO:   

YES     NO    IS THIS A UNIVERSAL WASTE?

YES    NO    IS THE GENERATOR OF THE WASTE CLASSIFIED AS A VERY SMALL QUANTITY GENERATOR (VSQG) OR A STATE EQUIVALENT DESIGNATION?

YES    NO    IS THIS MATERIAL GOING TO BE MANAGED AS A RCRA EXEMPT COMMERCIAL PRODUCT, WHICH IS FUEL (40 CFR 261.2 (C)(2)(II))?

YES     NO    DOES TREATMENT OF THIS WASTE GENERATE A F006 OR F019 SLUDGE?

YES    NO    IS THIS WASTE STREAM SUBJECT TO THE INORGANIC METAL BEARING WASTE PROHIBITION FOUND AT 40 CFR 268.3(C)?

YES    NO    DOES THIS WASTE CONTAIN VOC'S IN CONCENTRATIONS  $\geq$ 500 PPM?

YES    NO    DOES THE WASTE CONTAIN GREATER THAN 20% OF ORGANIC CONSTITUENTS WITH A VAPOR PRESSURE  $\geq$  .3KPA (.044 PSIA)?

YES     NO    DOES THIS WASTE CONTAIN AN ORGANIC CONSTITUENT WHICH IN ITS PURE FORM HAS A VAPOR PRESSURE > 76.6 KPA (11.1 PSIA)?

YES     NO    IS THIS CERCLA REGULATED (SUPERFUND ) WASTE ?

YES     NO    IS THE WASTE SUBJECT TO ONE OF THE FOLLOWING NESHAP RULES?  
                                          Hazardous Organic NESHAP (HON) rule (subpart G)                                            Pharmaceuticals production (subpart GGG)

YES     NO    IF THIS IS A US EPA HAZARDOUS WASTE, DOES THIS WASTE STREAM CONTAIN BENZENE?  
 YES    NO    Does the waste stream come from a facility with one of the SIC codes listed under benzene NESHAP or is this waste regulated under the benzene NESHAP rules because the original source of the waste is from a chemical manufacturing, coke by-product recovery, or petroleum refinery process?  
 YES    NO    Is the generating source of this waste stream a facility with Total Annual Benzene (TAB) >10 Mg/year?  
 What is the TAB quantity for your facility?     Megagram/year (1 Mg = 2,200 lbs)  
 The basis for this determination is: Knowledge of the Waste Or Test Data                                            Knowledge                                            Testing  
 Describe the knowledge :   

**G. DOT/TDG INFORMATION**

DOT/TDG PROPER SHIPPING NAME:  
**UN1993, WASTE FLAMMABLE LIQUIDS, N.O.S., (ISOPROPANOL, ACETONE), 3, PG III**

**H. TRANSPORTATION REQUIREMENTS**

ESTIMATED SHIPMENT FREQUENCY    ONE TIME     WEEKLY    MONTHLY    QUARTERLY    YEARLY    OTHER

|                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><input checked="" type="checkbox"/> <b>CONTAINERIZED</b></p> <p><b>1-5</b> CONTAINERS/SHIPMENT</p> <p>STORAGE CAPACITY:                    <b>5</b></p> <p>CONTAINER TYPE:</p> <p><input checked="" type="checkbox"/> PORTABLE TOTE TANK                    BOXICARTONICASE</p> <p>CUBIC YARD BOX                    DRUM</p> <p>OTHER:                    DRUM SIZE:                    <b>275</b></p> | <p><b>BULK LIQUID</b></p> <p>GALLONS/SHIPMENT:    <b>0 Min -0 Max</b></p> <p>GAL.</p> | <p><b>BULK SOLID</b></p> <p>SHIPMENT UOM:                    TON                    YARD</p> <p>TONS/YARDS/SHIPMENT:    <b>0 Min - 0 Max</b></p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|

**I. SPECIAL REQUEST**

COMMENTS OR REQUESTS:  
**INCINERATION ONLY**

**GENERATOR'S CERTIFICATION**

I certify that I am authorized to execute this document as an authorized agent. I hereby certify that all information submitted in this and attached documents is correct to the best of my knowledge. I also certify that any samples submitted are representative of the actual waste. If Clean Harbors discovers a discrepancy during the approval process, Generator grants Clean Harbors the authority to amend the profile, as Clean Harbors deems necessary, to reflect the discrepancy.

|                          |                         |                           |                   |
|--------------------------|-------------------------|---------------------------|-------------------|
| AUTHORIZED SIGNATURE     | NAME (PRINT)            | TITLE                     | DATE              |
| salkhafaji@actenviro.com | <b>Sameei Alkhafaji</b> | <b>Operations Manager</b> | <b>10/12/2021</b> |

This waste profile has been submitted using Clean Harbors' electronic signature system.

\*40 CFR Sec. 264.12 required notice:

As required by Federal Resource Conservation and Recovery Act regulations found in 40 CFR Part 264.12(b) and all equivalent State hazardous waste regulations, notice is hereby provided that all Clean Harbors facilities that may be used to treat, store, and /or dispose of the hazardous waste described on this waste profile have the appropriate permits and the capacity to manage these wastes.

Please note this profile must be submitted for re-evaluation if there has been a change in the waste generating process or when there have been changes in the chemical composition or physical characteristics of the material.

**Addendum**

---

**D. COMPOSITION**

| CHEMICAL                      | MIN     | -- | MAX    | UOM |
|-------------------------------|---------|----|--------|-----|
| TETRAMETHYLAMMONIUM HYDROXIDE | 1.00000 | -- | 5.0000 | %   |
|                               | 00      |    | 000    |     |
| <hr/>                         |         |    |        |     |
| WATER                         | 50.0000 | -- | 75.000 | %   |
|                               | 000     |    | 0000   |     |
| <hr/>                         |         |    |        |     |

**G. DOT/TDG INFORMATION**



WORLD OIL RECYCLING'S LABORATORY IS CERTIFIED BY THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM (ELAP) CERT. # 2037

# GENERATOR'S WASTE PROFILE WORKSHEET

## GENERATOR'S INFORMATION

- A. GENERATOR'S NAME Apple, Inc
- B. EPA ID# CAR000278176
- C. GENERATOR'S ADDRESS 3250 Scott Blvd
- D. PHONE (408)990-5691
- E. CITY, STATE, ZIP Santa Clara, CA 95054
- F. GENERATOR CONTACT Sameei Alkhafaji
- G. TITLE Project Manager
- H. CUSTOMER NAME ACTenviro
- I. PHONE (408)548-5050
- J. TRANSPORTER NAME ACTenviro
- K. PHONE (408)548-5050
- L. TRANSPORTER EPA ID# CAR000070540
- M. CONTACT 408-548-5050

- A. NAME OF WASTE Water with solvents (1-METHYL-2-PYRROLIDONE, Acetone, IPA, Butyl Acetate, N-METHYL PYRROLIDONE)
- B. CALIFORNIA HAZARDOUS WASTE CODE NO. 133
- C. EPA HAZARDOUS WASTE CODE NO. NONE
- D. DESCRIBE PROCESS GENERATING WASTE STRIPPING PROCESS USING SOLVENT in wafer fabrication  
 IS THIS WASTE REGULATED UNDER THE BENZENE NESHAP RULES?  yes  no  
 IF YES, IS BENZENE WASTE FROM A CHEMICAL MANUFACTURING, COKE BY-PRODUCT RECOVERY, OR PETROLEUM REFINERY PROCESS?  yes  no
- E. DOES THIS WASTE CONTAIN PCB'S?  yes  no
- F. DOES THIS WASTE CONTAIN DIOXIN? (F020-F028)  yes  no
- G. DOES THIS WASTE CONTAIN SULFIDES OR CYANIDES?  yes  no
- H. DOES THIS WASTE CONTAIN PESTICIDES OR HERBICIDES?  yes  no  
(IF YES, IDENTIFY IN ITEMS A OR D ABOVE.)
- I. DOES THIS WASTE CONTAIN SOLVENTS?  yes  no  
(IF YES, IDENTIFY IN ITEMS A OR D ABOVE.)
- J. DOES THIS WASTE CONTAIN PLATING WASTE?  yes  no
- K. HAS THIS WASTE BEEN MIXED WITH RCRA LISTED WASTE? (F, K, U OR P EPA WASTE CODES)  yes  no
- L. IF YOU HAVE MSDS FOR COMPONENTS IN THIS WASTE, PLEASE ATTACH .....MSDS ATTACHED
- M. IF YOU HAVE CURRENT ANALYSIS OF THIS WASTE, PLEASE ATTACH .....CHEMICAL ANALYSIS ATTACHED
- N. PACKAGING / VOLUME  BULK LIQUID  DRUMS  OTHER \_\_\_\_\_  AMOUNT \_\_\_\_\_  
 GALLONS  LBS.  CUBIC YARDS PER:  DAY  MONTH  QUARTER  YEAR

## GENERATOR'S CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION PROVIDED ON THIS DOCUMENT, IS TRUE AND ACCURATE, AND NO INTENTIONAL MIS-REPRESENTATION HAS BEEN COMMITTED BY ANYONE. I FURTHER CERTIFY THAT ANY SAMPLE(S) PROVIDED WITH THIS WASTE PROFILE WERE TAKEN AND PRESERVED IN ACCORDANCE WITH 40 CFR 261, APPENDIX 1 AND ARE ACCURATE AND REPRESENTATIVE OF MY ACTUAL WASTE STREAM. I HEREBY AGREE TO NOTIFY WORLD OIL RECYCLING SHOULD THIS WASTE STREAM CHANGE IN ANY WAY.

AUTHORIZED SIGNATURE On behalf of Apple, Inc  DATE 05 / 02 / 2022

PRINT NAME AND TITLE Sameei Alkhafaji | Project Manager

## SAFETY DATA SHEET

Creation Date 01-September-2009

Revision Date 18-January-2018

Revision Number 4

### 1. Identification

**Product Name** 2-Propanol

**Cat No. :** A426F-1GAL; A426P-4; A426S-4; A426S-20; A426S-200

**CAS-No** 67-63-0

**Synonyms** 2-Propanol; IPA; Isopropyl alcohol; Propan-2-ol; Isopropanol

**Recommended Use** Laboratory chemicals.

**Uses advised against** Not for food, drug, pesticide or biocidal product use

#### Details of the supplier of the safety data sheet

##### Company

##### **Importer/Distributor**

Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

##### **Manufacturer**

Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

##### **Emergency Telephone Number**

CHEMTREC®, Inside the USA: 800-424-9300  
CHEMTREC®, Outside the USA: 001-703-527-3887

### 2. Hazard(s) identification

#### Classification

**WHMIS 2015 Classification** Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

|                                                                   |            |
|-------------------------------------------------------------------|------------|
| <b>Flammable liquids</b>                                          | Category 2 |
| <b>Serious Eye Damage/Eye Irritation</b>                          | Category 2 |
| <b>Specific target organ toxicity (single exposure)</b>           | Category 3 |
| Target Organs - Respiratory system, Central nervous system (CNS). |            |
| <b>Specific target organ toxicity - (repeated exposure)</b>       | Category 2 |
| Target Organs - Kidney, Liver.                                    |            |

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Highly flammable liquid and vapor  
Causes serious eye irritation  
May cause respiratory irritation  
May cause drowsiness and dizziness  
May cause damage to organs through prolonged or repeated exposure





### Precautionary Statements

#### Prevention

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

Keep container tightly closed

Ground/bond container and receiving equipment

Use explosion-proof electrical/ventilating/lighting/equipment

Use only non-sparking tools

Take precautionary measures against static discharges

Do not breathe dust/fumes/gas/mist/vapours/spray

Wash face, hands and any exposed skin thoroughly after handling

Use only outdoors or in a well-ventilated area

Wear protective gloves/protective clothing/eye protection/face protection

#### Response

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower

IF INHALED: Remove person to fresh air and keep comfortable for breathing

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Call a POISON CENTER/ doctor if you feel unwell

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

#### Storage

Store in a well-ventilated place. Keep container tightly closed

Store locked up

#### Disposal

Dispose of contents/container to an approved waste disposal plant

## 3. Composition/Information on Ingredients

| Component         | CAS-No  | Weight % |
|-------------------|---------|----------|
| Isopropyl alcohol | 67-63-0 | >95      |

## 4. First-aid measures

|                                        |                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye Contact</b>                     | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.                                                                          |
| <b>Skin Contact</b>                    | Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.                                                                              |
| <b>Inhalation</b>                      | Move to fresh air. Obtain medical attention. If not breathing, give artificial respiration.                                                                                              |
| <b>Ingestion</b>                       | Do not induce vomiting. Obtain medical attention.                                                                                                                                        |
| <b>Most important symptoms/effects</b> | Breathing difficulties. May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting |
| <b>Notes to Physician</b>              | Treat symptomatically                                                                                                                                                                    |

## 5. Fire-fighting measures

|                                         |                                                                                                                            |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Suitable Extinguishing Media</b>     | CO <sub>2</sub> , dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray. |
| <b>Unsuitable Extinguishing Media</b>   | Water may be ineffective                                                                                                   |
| <b>Flash Point</b>                      | 12 °C / 53.6 °F                                                                                                            |
| <b>Method -</b>                         | Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106)                                                                    |
| <b>Autoignition Temperature</b>         | 425 °C / 797 °F                                                                                                            |
| <b>Explosion Limits</b>                 |                                                                                                                            |
| <b>Upper</b>                            | 12 vol %                                                                                                                   |
| <b>Lower</b>                            | 2 vol %                                                                                                                    |
| <b>Sensitivity to Mechanical Impact</b> | No information available                                                                                                   |
| <b>Sensitivity to Static Discharge</b>  | No information available                                                                                                   |

**Specific Hazards Arising from the Chemical**

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

**Hazardous Combustion Products**

Carbon monoxide (CO) Carbon dioxide (CO<sub>2</sub>) peroxides

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**

|               |                     |                    |                         |
|---------------|---------------------|--------------------|-------------------------|
| <b>Health</b> | <b>Flammability</b> | <b>Instability</b> | <b>Physical hazards</b> |
| 2             | 3                   | 0                  | N/A                     |

## 6. Accidental release measures

|                                  |                                                                                                                                                                       |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Personal Precautions</b>      | Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing. |
| <b>Environmental Precautions</b> | Should not be released into the environment. See Section 12 for additional ecological information.                                                                    |

|                                             |                                                                                                                                                                                                                                                                                            |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Methods for Containment and Clean Up</b> | Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Keep in suitable, closed containers for disposal. |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7. Handling and storage

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Handling</b> | Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. |
| <b>Storage</b>  | Keep away from heat and sources of ignition. Flammables area. Keep container tightly closed in a dry and well-ventilated place.                                                                                                                                                                                                                                                                                            |

## 8. Exposure controls / personal protection

**Exposure Guidelines**

| Component         | Alberta                  | British Columbia              | Ontario TWAEV                 | Quebec                   | ACGIH TLV                     | OSHA PEL                  | NIOSH IDLH                     |
|-------------------|--------------------------|-------------------------------|-------------------------------|--------------------------|-------------------------------|---------------------------|--------------------------------|
| Isopropyl alcohol | TWA: 200 ppm<br>TWA: 492 | TWA: 200 ppm<br>STEL: 400 ppm | TWA: 200 ppm<br>STEL: 400 ppm | TWA: 400 ppm<br>TWA: 985 | TWA: 200 ppm<br>STEL: 400 ppm | (Vacated) TWA:<br>400 ppm | IDLH: 2000 ppm<br>TWA: 400 ppm |

|  |                                                                      |  |  |                                                                       |  |                                                                                                                                                                     |                                                                                   |
|--|----------------------------------------------------------------------|--|--|-----------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | mg/m <sup>3</sup><br>STEL: 400 ppm<br>STEL: 984<br>mg/m <sup>3</sup> |  |  | mg/m <sup>3</sup><br>STEL: 500 ppm<br>STEL: 1230<br>mg/m <sup>3</sup> |  | (Vacated) TWA:<br>980 mg/m <sup>3</sup><br>(Vacated) STEL:<br>500 ppm<br>(Vacated) STEL:<br>1225 mg/m <sup>3</sup><br>TWA: 400 ppm<br>TWA: 980<br>mg/m <sup>3</sup> | TWA: 980<br>mg/m <sup>3</sup><br>STEL: 500 ppm<br>STEL: 1225<br>mg/m <sup>3</sup> |
|--|----------------------------------------------------------------------|--|--|-----------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|

**Legend**

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

**Engineering Measures**

Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment****Eye Protection**

Goggles

**Hand Protection**

Wear appropriate protective gloves and clothing to prevent skin exposure.

| Glove material | Breakthrough time   | Glove thickness | Glove comments                                                                       |
|----------------|---------------------|-----------------|--------------------------------------------------------------------------------------|
| Butyl rubber   | > 480 minutes       | 0.5 mm          | Permeation rate < 0.9<br>µg/cm <sup>2</sup> /min                                     |
| Nitrile rubber | > 360 - 480 minutes | 0.35 - 0.55 mm  | As tested under EN374-3<br>Determination of Resistance to<br>Permeation by Chemicals |

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to EN14387

When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls**

No information available.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

## 9. Physical and chemical properties

|                            |                          |
|----------------------------|--------------------------|
| <b>Physical State</b>      | Liquid                   |
| <b>Appearance</b>          | Colorless                |
| <b>Odor</b>                | Alcohol-like             |
| <b>Odor Threshold</b>      | No information available |
| <b>pH</b>                  | 7 1% aq. sol             |
| <b>Melting Point/Range</b> | -89.5 °C / -129.1 °F     |

|                                               |                                                         |
|-----------------------------------------------|---------------------------------------------------------|
| <b>Boiling Point/Range</b>                    | 81 - 83 °C / 177.8 - 181.4 °F @ 760 mmHg                |
| <b>Flash Point</b>                            | 12 °C / 53.6 °F                                         |
| <b>Method -</b>                               | Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106) |
| <b>Evaporation Rate</b>                       | 1.7                                                     |
| <b>Flammability (solid,gas)</b>               | Not applicable                                          |
| <b>Flammability or explosive limits</b>       |                                                         |
| <b>Upper</b>                                  | 12 vol %                                                |
| <b>Lower</b>                                  | 2 vol %                                                 |
| <b>Vapor Pressure</b>                         | 43 mmHg @ 20 °C                                         |
| <b>Vapor Density</b>                          | 2.1 @ 20 °C / 68 °F                                     |
| <b>Specific Gravity</b>                       | 0.785                                                   |
| <b>Solubility</b>                             | Miscible with water                                     |
| <b>Partition coefficient; n-octanol/water</b> | No data available                                       |
| <b>Autoignition Temperature</b>               | 425 °C / 797 °F                                         |
| <b>Decomposition Temperature</b>              | No information available                                |
| <b>Viscosity</b>                              | 2.27 mPa.s at 20 °C                                     |
| <b>Molecular Formula</b>                      | C3 H8 O                                                 |
| <b>Molecular Weight</b>                       | 60.1                                                    |
| <b>VOC Content(%)</b>                         | 100% (Organic Carbon (by mass) = 59.9 %) (EC/1999/13)   |
| <b>Refractive index</b>                       | 1.377 at 20 °C / 68 °F (ASTM D-1218)                    |
| <b>Surface tension</b>                        | 22.7 mN/m at 20 °C / 68 °F                              |
| <b>Coefficient of expansion</b>               | 0.0009 / °C                                             |
| <b>Dielectric constant</b>                    | 18.6 at 20 °C / 68 °F                                   |
| <b>Heat of vapourisation</b>                  | 665 J/g                                                 |
| <b>Specific heat capacity</b>                 | 3 kJ/kg °C at 20 °C / 68 °F                             |
| <b>Thermal conductivity</b>                   | 0.137 W/m °C at 20 °C / 68 °F                           |

## 10. Stability and reactivity

|                                         |                                                                                            |
|-----------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Reactive Hazard</b>                  | None known, based on information available                                                 |
| <b>Stability</b>                        | Stable under normal conditions.                                                            |
| <b>Conditions to Avoid</b>              | Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition. |
| <b>Incompatible Materials</b>           | Strong oxidizing agents, Acids, Halogens, Acid anhydrides                                  |
| <b>Hazardous Decomposition Products</b> | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), peroxides                         |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.                                                   |
| <b>Hazardous Reactions</b>              | None under normal processing.                                                              |

## 11. Toxicological information

### Acute Toxicity

#### Product Information

#### Component Information

| Component         | LD50 Oral          | LD50 Dermal                                   | LC50 Inhalation       |
|-------------------|--------------------|-----------------------------------------------|-----------------------|
| Isopropyl alcohol | 5840 mg/kg ( Rat ) | 13900 mg/kg ( Rat )<br>12870 mg/kg ( Rabbit ) | 72.6 mg/L ( Rat ) 4 h |

**Toxicologically Synergistic Products** No information available

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

|                      |                             |
|----------------------|-----------------------------|
| <b>Irritation</b>    | Irritating to eyes and skin |
| <b>Sensitization</b> | No information available    |

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Component         | CAS-No  | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|-------------------|---------|------------|------------|------------|------------|------------|
| Isopropyl alcohol | 67-63-0 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** Respiratory system Central nervous system (CNS)

**STOT - repeated exposure** Kidney Liver

**Aspiration hazard** No information available

**Symptoms / effects, both acute and delayed** May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

. Do not empty into drains.

| Component         | Freshwater Algae                                                                                           | Freshwater Fish                                                                                                                                                               | Microtox                                              | Water Flea                                      |
|-------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------|
| Isopropyl alcohol | EC50: > 1000 mg/L, 72h<br>(Desmodesmus subspicatus)<br>EC50: > 1000 mg/L, 96h<br>(Desmodesmus subspicatus) | LC50: > 1400000 µg/L, 96h<br>(Lepomis macrochirus)<br>LC50: = 9640 mg/L, 96h<br>flow-through (Pimephales promelas)<br>LC50: = 11130 mg/L, 96h<br>static (Pimephales promelas) | = 35390 mg/L EC50<br>Photobacterium phosphoreum 5 min | 13299 mg/L EC50 = 48 h<br>9714 mg/L EC50 = 24 h |

**Persistence and Degradability** Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its volatility.

| Component         | log Pow |
|-------------------|---------|
| Isopropyl alcohol | 0.05    |

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

### DOT

**UN-No** UN1219  
**Proper Shipping Name** Isopropanol  
**Hazard Class** 3  
**Packing Group** II

### TDG

|                             |                                 |
|-----------------------------|---------------------------------|
| <b>UN-No</b>                | UN1219                          |
| <b>Proper Shipping Name</b> | ISOPROPANOL                     |
| <b>Hazard Class</b>         | 3                               |
| <b>Packing Group</b>        | II                              |
| <b>IATA</b>                 |                                 |
| <b>UN-No</b>                | UN1219                          |
| <b>Proper Shipping Name</b> | Isopropanol                     |
| <b>Hazard Class</b>         | 3                               |
| <b>Packing Group</b>        | II                              |
| <b>IMDG/IMO</b>             |                                 |
| <b>UN-No</b>                | UN1219                          |
| <b>Proper Shipping Name</b> | Isopropanol (Isopropyl alcohol) |
| <b>Hazard Class</b>         | 3                               |
| <b>Packing Group</b>        | II                              |

## 15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

### International Inventories

| Component         | DSL | NDSL | TSCA | EINECS    | ELINCS | NLP | PICCS | ENCS | AICS | IECSC | KECL |
|-------------------|-----|------|------|-----------|--------|-----|-------|------|------|-------|------|
| Isopropyl alcohol | X   | -    | X    | 200-661-7 | -      |     | X     | X    | X    | X     | X    |

### Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

| Component         | Canada - National Pollutant Release Inventory (NPRI)       | Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances | Canada's Chemicals Management Plan (CEPA) |
|-------------------|------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------|
| Isopropyl alcohol | Part 1, Group A Substance<br>Part 5, Individual Substances |                                                                            |                                           |

## 16. Other information

**Prepared By** Regulatory Affairs  
Thermo Fisher Scientific  
Email: EMSDS.RA@thermofisher.com

**Creation Date** 01-September-2009

**Revision Date** 18-January-2018

**Print Date** 18-January-2018

**Revision Summary** This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**

B(4)

# SAFETY DATA SHEET

Substance No.: **B(4)**  
Version 4.1

Revision Date 04/04/2015  
Print Date 10/29/2015

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : **B(4)**

Product Use Description : Intermediate for electronic industry

Company : EMD Performance Materials Corp.  
An affiliate of Merck KGaA, Darmstadt Germany  
One International Plaza, Suite 300  
Philadelphia, PA 19113

Telephone : 1-888-367-3275

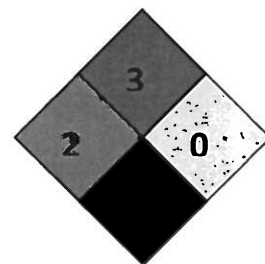
Emergency telephone number : 1-800-424-9300 (CHEMTREC)

## SECTION 2. HAZARDS IDENTIFICATION

### Emergency Overview

**HMIS Classification** : Health hazard: 2  
Flammability: 3  
Reactivity: 0  
PPE:X

**NFPA Classification** : Health hazard: 2  
Fire Hazard: 3  
Reactivity Hazard: 0  
Special Hazards: NONE



### GHS Classification

Hazard category, Hazard class : Flammable liquids, Category 3

Hazard category, Hazard class : Eye irritation, Category 2A

Hazard category, Hazard class : Specific target organ toxicity - single exposure, Category 3

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Substance No.: ~~B(4)~~  
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### GHS-Labeling

Symbol(s)



Signal word

: Warning

Hazard statements

: Flammable liquid and vapour.  
Causes serious eye irritation.  
May cause respiratory irritation, and drowsiness or dizziness.

Precautionary statements

: **Prevention:**  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
Keep container tightly closed.  
Ground/bond container and receiving equipment.  
Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
Use only non-sparking tools.  
Take precautionary measures against static discharge.  
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
Wash skin thoroughly after handling.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.  
**Response:**  
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF exposed or if you feel unwell:  
Get medical advice/ attention.  
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.  
**Storage:**  
Store in a well-ventilated place. Keep cool.  
Store in a closed container.  
**Disposal:**  
Dispose of contents/ container to an approved waste disposal plant.



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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Hazardous ingredients

| Component                    | CAS-No.    | Weight percent |
|------------------------------|------------|----------------|
| 1-Methoxy-2-propanol         | 107-98-2   | 65 - 75        |
| 1-Methoxy-2-propanol acetate | 108-65-6   | 25 - 35        |
| 2-Methoxy-1-propanol acetate | 70657-70-4 | < 0.3          |

## SECTION 4. FIRST AID MEASURES

### First aid procedures

- Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.
- Skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
- Eye contact : Remove contact lenses. Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.
- Ingestion : Keep respiratory tract clear. If conscious, drink plenty of water. Never give anything by mouth to an unconscious person. Obtain medical attention.

## SECTION 5. FIREFIGHTING MEASURES

### Flammable properties

- Flash point : 90 °F (32 °C)  
Method: closed cup

### Fire fighting

- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Further information : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Cool containers/tanks with water spray.

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### Protective equipment and precautions for firefighters

Specific hazards during firefighting : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10).

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Environmental precautions : Do not allow entry to drains, water courses or soil  
Prevent spreading by use of suitable barriers.  
Local authorities should be advised if significant spillages cannot be contained.

Methods for containment /  
Methods for cleaning up : Wearing appropriate personal protective equipment, contain spill, ventilate area of spill or leak, remove all sparking devices or ignition sources, collect onto inert absorbent, and place in a suitable container.

---

### SECTION 7. HANDLING AND STORAGE

#### Handling

Handling : Wash thoroughly after handling.  
Keep container closed.  
Avoid breathing vapors and contact with skin, eyes, and clothing.  
Use only with adequate ventilation and proper protective eyewear, gloves, and clothing.  
Keep away from heat, sparks, and flame.

Advice on protection against fire and explosion : Keep away from sources of ignition  
Take precautions against accumulation of electrostatic charge

#### Storage

Further information on storage conditions : Store at appropriate temperature. See label for details.  
Store in original container.  
Transport and store under dry conditions tightly closed and protected from heat and light.  
May liberate flammable solvent vapors.

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Revision Date 04/04/2015  
Print Date 10/29/2015**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Exposure Guidelines****Components with workplace control parameters**

| Components                   | CAS-No.  | Control parameters                     | Basis     |
|------------------------------|----------|----------------------------------------|-----------|
| 1-Methoxy-2-propanol         | 107-98-2 | TWA: 50 ppm                            | ACGIH     |
|                              |          | STEL: 100 ppm                          |           |
|                              |          | TWA: 100 ppm (360 mg/m <sup>3</sup> )  | OSHA P0   |
|                              |          | STEL: 150 ppm (540 mg/m <sup>3</sup> ) |           |
|                              |          | TWA: 100 ppm (360 mg/m <sup>3</sup> )  | NIOSH REL |
|                              |          | ST: 150 ppm (540 mg/m <sup>3</sup> )   |           |
| 1-Methoxy-2-propanol acetate | 108-65-6 | TWA: 50 ppm                            | US WEEL   |

**Engineering measures**

Engineering measures : Handle only in a place equipped with local exhaust (or other appropriate exhaust).

**Personal protective equipment**

Eye protection : Safety eyewear to protect against splashes.

Hand protection : Solvent-resistant gloves

Skin and body protection : Clothing suitable to prevent skin contact.

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.  
Respirator with filter for organic vapour  
Use NIOSH approved respiratory protection.

Hygiene measures : Observe the usual precautions when handling chemicals.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form : Liquid  
Color : Clear, colorless  
Odor : Strong, characteristic odor.

**Safety data**

Flash point : 90 °F (32 °C)  
Method: closed cup

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|                  |                                                                            |
|------------------|----------------------------------------------------------------------------|
| Boiling point    | : 255 °F (124 °C)<br>at 1,013 hPa<br>Method: DIN 51751                     |
| Vapour pressure  | : ca. 10.5 Torr<br>at 68 °F (20 °C)<br>Method: calculated                  |
| Density          | : 0.9326 g/cm <sup>3</sup><br>at 68 °F (20 °C)                             |
| Water solubility | : The solvent is partially water soluble but the product forms two layers. |
| VOC              | : 933 g/l (Calculated value)                                               |
| Loss on drying   | : > 98 %                                                                   |

---

### SECTION 10. STABILITY AND REACTIVITY

|                                  |                                                                                                                                       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Conditions to avoid              | : Avoid contact with strong oxidizing agents. Contact with strong acids and bases may cause hydrolysis of product.                    |
| Hazardous decomposition products | : Hazardous decomposition products due to incomplete combustion<br>Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke). |
| Hazardous reactions              | : Hazardous polymerisation does not occur.                                                                                            |
| Chemical stability               | : Stable under normal conditions.                                                                                                     |

---

### SECTION 11. TOXICOLOGICAL INFORMATION

Data for B(4)

Further information : No toxicological testing was carried out on the preparation.

Data for 1-Methoxy-2-propanol (107-98-2)

Acute oral toxicity : LD50 Oral: > 5,000 mg/kg  
Species: rat

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|                           |                                                               |
|---------------------------|---------------------------------------------------------------|
| Acute inhalation toxicity | : LC50: > 7559 ppm<br>Exposure time: 6 h<br>Species: rat      |
| Acute dermal toxicity     | : LD50 Dermal: 13,000 mg/kg<br>Species: rabbit                |
| Skin irritation           | : Result: slight irritant effect - does not require labelling |
| Eye irritation            | : Result: Mild eye irritation                                 |
| Sensitisation             | : Result: No evidence of sensitizing properties.              |

### Data for 1-Methoxy-2-propanol acetate (108-65-6)

|                           |                                                             |
|---------------------------|-------------------------------------------------------------|
| Acute oral toxicity       | : LD50: 8,532 mg/kg<br>Species: rat                         |
| Acute inhalation toxicity | : LC50: > 23.8 mg/l<br>Exposure time: 6 h<br>Species: rat   |
| Acute dermal toxicity     | : LD50: > 5,000 mg/kg<br>Species: rabbit                    |
| Skin irritation           | : Result: non-irritant                                      |
| Eye irritation            | : Result: Moderate eye irritation<br>Source : Supplier MSDS |
| Sensitisation             | : Species: Guinea pig<br>Result: non-sensitizing            |

### Toxicology Assessment

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CMR effects | : Teratogenicity:<br>Oral and Inhalation developmental toxicity studies were conducted in pregnant rats and rabbits with PGMEA (1-Methoxy-2-propanol acetate) containing approximately 2% beta isomer (cited in 1-METHOXY-2-PROPANOL ACETATE OECD SIDS Report). No statistically significant effects were noted in developmental parameters at any of the dose levels tested (Oral study - up to 1,000 mg/kg/day and inhalation study - up to 4000 ppm). |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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### Data for 2-Methoxy-1-propanol acetate (70657-70-4)

Acute inhalation toxicity : Data refers to Beta Isomer  
**Toxicology Assessment**

CMR effects : Teratogenicity:  
The beta isomer, 2-Methoxy-1-propanol acetate, was tested by itself for developmental/teratogenic effects in pregnant rats and rabbits. Developmental/teratogenic effects were observed in both species via the inhalation route of exposure. In rabbits, the effects only occurred in the highest dose group (545 ppm) in absence of any significant maternal toxicity. In rats, these effects were also only observed in the highest dose group, but in the presence of significant maternal toxicity, which placed the cause of the developmental effects in question. The No Observable Adverse Effect Level, NOAEL, for the inhalation exposures in rabbits with the pure beta isomer was determined to be 145 ppm, this equates to exposure of 1-Methoxy-2-propanol acetate with a level of beta isomer > 2%. Since this Product formulation contains < 0.3% of the beta isomer, it is judged that exposure to this product formulation does not pose a reproductive hazard.

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## SECTION 12. ECOLOGICAL INFORMATION

Data for B(4)

Additional ecological information : No ecological testing was carried out on the preparation.

### Data for 1-Methoxy-2-propanol (107-98-2)

#### Ecotoxicity effects

Toxicity to fish : LC50: 6,812 mg/l Exposure time: 96 h  
Species: golden orfe  
: LC50: 20,800 mg/l Exposure time: 96 h  
Species: Fathead minnow  
: LC50: > 1,000 mg/l Exposure time: 96 h  
Species: rainbow trout

Toxicity to daphnia and other aquatic invertebrates : EC50: > 500 mg/l  
Exposure time: 48 h  
Species: Daphnia magna

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Toxicity to algae : EC50: > 1,000 mg/l  
Exposure time: 96 h  
Species: Green algae

Toxicity to bacteria : IC50: > 1,000 mg/l  
Exposure time: 3 h  
Species: activated sludge

**Elimination information (persistence and degradability)**

Biodegradability : 98 %

**Data for 1-Methoxy-2-propanol acetate (108-65-6)****Ecotoxicity effects**

Toxicity to fish : LC50: 100 - 180 mg/l Exposure time: 96 h  
Species: Oncorhynchus mykiss (rainbow trout)

: LC50: 161 mg/l Exposure time: 96 h  
Species: Fish general (Pisces)

: NOEC: 100 mg/l Exposure time: 96 h  
Species: Fish general (Pisces)

Toxicity to daphnia and other aquatic invertebrates : EC50: > 500 mg/l  
Species: Daphnia magna

Toxicity to bacteria : EC20: 1,000 mg/l  
Exposure time: 30 min  
Species: activated sludge

**Elimination information (persistence and degradability)**

Biodegradability : Method: OECD 302 B  
: The product is biodegradable.

**SECTION 13. DISPOSAL CONSIDERATIONS**

Further information : Dispose of as hazardous waste in compliance with local and national regulations.  
For disposal, this material is a flammable hazardous waste under RCRA.

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Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

RCRA hazardous waste : RCRA number: D001  
Yes -- If it becomes a waste as sold.

### SECTION 14. TRANSPORT INFORMATION

#### DOT

UN number : 1993  
Description of the goods : Flammable liquids, n.o.s.  
(1-Methoxy-2-propanol, 1-Methoxy-2-propanol acetate)  
Class : 3  
Packing group : III  
Labels : 3  
Emergency Response : 128  
Guidebook Number :  
Environmentally hazardous : no

#### IATA

UN number : 1993  
Description of the goods : Flammable liquid, n.o.s.  
(1-Methoxy-2-propanol, 2-Methoxy-1-methylethyl acetate)  
Class : 3  
Packing group : III  
Labels : 3  
Environmentally hazardous : no

#### IMDG

UN number : 1993  
Description of the goods : FLAMMABLE LIQUID, N.O.S.  
(1-Methoxy-2-propanol, 2-Methoxy-1-methylethyl acetate)  
Class : 3  
Packing group : III  
Labels : 3  
EmS Number 1 : F-E  
EmS Number 2 : S-E  
Marine pollutant : no  
Environmentally hazardous : no  
Additional data for transport : No Segregation Group



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### SECTION 15. REGULATORY INFORMATION

#### Notification status

- TSCA** : All components of this product are listed on the TSCA Inventory.
- DSL** : All components of this product are on the Canadian DSL.
- WHMIS Classification** : B2: Flammable liquid
- Canadian PBT Chemicals** : This product does not contain any components on the DSL that are classified as Persistent, Bioaccumulative and Toxic (PBT) under CEPA.
- CERCLA Reportable Quantity** :  
This material does not contain any components with a CERCLA RQ.

#### Carcinogenicity

- IARC** : No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- OSHA** : No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
- NTP** : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- ACGIH** : No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

#### EPCRA - Emergency Planning and Community Right-to-Know Act

- SARA 302 Reportable Quantity** : This material does not contain any components with a SARA 302 RQ.
- SARA 304 Extremely Hazardous Substances** : This material does not contain any components with a section 304 EHS RQ.

**SARA 313**: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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## Clean Air Act

### **Ozone-Depletion Potential**

: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

### **US. Clean Air Act - Hazardous Air Pollutants (HAP)**

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

### **US. Clean Air Act Section 112(r); Regulated toxic and flammable substances for Accidental Release Prevention - 40 CFR 68.130 (subpart F)**

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

### **US. Clean Air Act Section 111 SOCM I Intermediate or Final Volatile Organic Compunds (VOC) - 40 CFR part 60.489**

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

## Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

## US State Regulations

**Massachusetts Right To Know Components** : 1-Methoxy-2-propanol 107-98-2

**Pennsylvania Right To Know Components** : 1-Methoxy-2-propanol 107-98-2  
1-Methoxy-2-propanol acetate 108-65-6

**New Jersey Right To Know Components** : 1-Methoxy-2-propanol 107-98-2  
1-Methoxy-2-propanol acetate 108-65-6

**California Prop. 65 Components** : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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### SECTION 16. OTHER INFORMATION

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. For any sub-heading within any section not addressed herein, no relevant information is determined or applicable. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications.

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## SAFETY DATA SHEET

Version 6.1  
Revision Date 01/13/2020  
Print Date 08/29/2020**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**Product name : Product Number :   
Brand : Aldrich  
CAS-No. : **1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**Company : Sigma-Aldrich Inc.  
3050 Spruce Street  
ST. LOUIS MO 63103  
UNITED STATESTelephone : +1 314 771-5765  
Fax : +1 800 325-5052**1.4 Emergency telephone number**Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**Flammable liquids (Category 2), H225  
Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 4), H332  
Acute toxicity, Dermal (Category 3), H311  
Short-term (acute) aquatic hazard (Category 3), H402  
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

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|                            |                                                                                                                            |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Hazard statement(s)        |                                                                                                                            |
| H225                       | Highly flammable liquid and vapour.                                                                                        |
| H302 + H332                | Harmful if swallowed or if inhaled.                                                                                        |
| H311                       | Toxic in contact with skin.                                                                                                |
| H412                       | Harmful to aquatic life with long lasting effects.                                                                         |
| Precautionary statement(s) |                                                                                                                            |
| P210                       | Keep away from heat/sparks/open flames/hot surfaces. No smoking.                                                           |
| P233                       | Keep container tightly closed.                                                                                             |
| P240                       | Ground/bond container and receiving equipment.                                                                             |
| P241                       | Use explosion-proof electrical/ ventilating/ lighting equipment.                                                           |
| P242                       | Use only non-sparking tools.                                                                                               |
| P243                       | Take precautionary measures against static discharge.                                                                      |
| P261                       | Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.                                                                     |
| P264                       | Wash skin thoroughly after handling.                                                                                       |
| P270                       | Do not eat, drink or smoke when using this product.                                                                        |
| P271                       | Use only outdoors or in a well-ventilated area.                                                                            |
| P273                       | Avoid release to the environment.                                                                                          |
| P280                       | Wear protective gloves/ eye protection/ face protection.                                                                   |
| P301 + P312 + P330         | IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.                                                 |
| P303 + P361 + P353         | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.                        |
| P304 + P340 + P312         | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. |
| P362                       | Take off contaminated clothing and wash before reuse.                                                                      |
| P370 + P378                | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.                                       |
| P403 + P235                | Store in a well-ventilated place. Keep cool.                                                                               |
| P405                       | Store locked up.                                                                                                           |
| P501                       | Dispose of contents/ container to an approved waste disposal plant.                                                        |

**2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none**

**SECTION 3: Composition/information on ingredients**

**3.1 Substances**

|                  |   |              |
|------------------|---|--------------|
| Synonyms         | : | ████████     |
| Formula          | : | ██████████   |
| Molecular weight | : | 161.39 g/mol |
| CAS-No.          | : | ██████████   |
| EC-No.           | : | ██████████   |

| Component  | Classification                                                                                                   | Concentration |
|------------|------------------------------------------------------------------------------------------------------------------|---------------|
| ██████████ | Flam. Liq. 2; Acute Tox. 4; Acute Tox. 3; Aquatic Acute 3; Aquatic Chronic 3; H225, H302, H332, H311, H402, H412 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## **SECTION 4: First aid measures**

### **4.1 Description of first aid measures**

#### **General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### **If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### **In case of skin contact**

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

#### **In case of eye contact**

Flush eyes with water as a precaution.

#### **If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### **4.2 Most important symptoms and effects, both acute and delayed**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### **4.3 Indication of any immediate medical attention and special treatment needed**

No data available

## **SECTION 5: Firefighting measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Dry powder Dry sand

#### **Unsuitable extinguishing media**

Do NOT use water jet.

### **5.2 Special hazards arising from the substance or mixture**

Carbon oxides, Nitrogen oxides (NO<sub>x</sub>), silicon oxides

Flash back possible over considerable distance., Container explosion may occur under fire conditions.

Combustible.

### **5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

### **5.4 Further information**

Use water spray to cool unopened containers.

## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

For personal protection see section 8.

### **6.2 Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### **6.3 Methods and materials for containment and cleaning up**

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

### **6.4 Reference to other sections**

For disposal see section 13.

## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

### **7.2 Conditions for safe storage, including any incompatibilities**

Handle under nitrogen, protect from moisture. Store under nitrogen. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Hydrolyses readily.

Storage class (TRGS 510): 3: Flammable liquids

### **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## **SECTION 8: Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

### **8.2 Exposure controls**

#### **Appropriate engineering controls**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.



## Personal protective equipment

### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.4 mm

Break through time: 480 min

Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 30 min

Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

### Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |               |                                           |
|---------------|-------------------------------------------|
| a) Appearance | Form: liquid, clear<br>Colour: colourless |
| b) Odour      | No data available                         |

|                                                 |                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|
| c) Odour Threshold                              | No data available                                                   |
| d) pH                                           | > 7.0                                                               |
| e) Melting point/freezing point                 | Melting point/range: -76.2 °C (-105.2 °F) at 1,013 hPa              |
| f) Initial boiling point and boiling range      | 125 °C 257 °F                                                       |
| g) Flash point                                  | 11.4 °C (52.5 °F) - closed cup                                      |
| h) Evaporation rate                             | No data available                                                   |
| i) Flammability (solid, gas)                    | No data available                                                   |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 16.3 %(V)<br>Lower explosion limit: 0.8 %(V) |
| k) Vapour pressure                              | 19 hPa at 20 °C (68 °F)                                             |
| l) Vapour density                               | No data available                                                   |
| m) Relative density                             | 0.774 g/mL at 25 °C (77 °F)                                         |
| n) Water solubility                             | insoluble                                                           |
| o) Partition coefficient: n-octanol/water       | log Pow: 2.62                                                       |
| p) Auto-ignition temperature                    | 380.0 °C (716.0 °F)                                                 |
| q) Decomposition temperature                    | No data available                                                   |
| r) Viscosity                                    | 0.9 mm <sup>2</sup> /s at 20 °C (68 °F) -                           |
| s) Explosive properties                         | No data available                                                   |
| t) Oxidizing properties                         | No data available                                                   |

## 9.2 Other safety information

No data available

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Hydrolyses readily.  
Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Vapours may form explosive mixture with air.

### 10.4 Conditions to avoid

Ammonia is formed upon contact with water or humid air.  
Heat, flames and sparks.

### 10.5 Incompatible materials

Strong oxidizing agents, Strong acids

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## 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NO<sub>x</sub>), silicon oxides

Other decomposition products - No data available

In the event of fire: see section 5

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - male and female - 851 mg/kg

(OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 6 h - 10 mg/l

(OECD Test Guideline 403)

LD50 Dermal - Rabbit - male and female - 547 - 589 mg/kg

(OECD Test Guideline 402)

No data available

#### Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

#### Respiratory or skin sensitisation

No data available

#### Germ cell mutagenicity

Ames test

S. typhimurium

Result: negative

#### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

#### Reproductive toxicity

##### Specific target organ toxicity - single exposure

No data available

##### Specific target organ toxicity - repeated exposure

No data available

#### Aspiration hazard

No data available

## Additional Information

Repeated dose toxicity - Rat - male and female - inhalation (vapour)  
RTECS: JM9230000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

## SECTION 12: Ecological information

### 12.1 Toxicity

|                                                     |                                                                                                            |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | semi-static test LC50 - Danio rerio (zebra fish) - 88 mg/l - 96 h<br>(Directive 67/548/EEC, Annex V, C.1.) |
| Toxicity to daphnia and other aquatic invertebrates | static test EC50 - Daphnia magna (Water flea) - 80 mg/l - 48 h<br>(Directive 67/548/EEC, Annex V, C.2.)    |
| Toxicity to algae                                   | EC50 - Desmodesmus subspicatus (green algae) - 19.00 mg/l - 72 h                                           |

### 12.2 Persistence and degradability

Biodegradability aerobic - Exposure time 28 d  
Result: 15.3 % - Not readily biodegradable.  
(Directive 67/548/EEC Annex V, C.4.E.)

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Harmful to aquatic life with long lasting effects.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Contact a licensed professional waste disposal service to dispose of this material.

#### Contaminated packaging

Dispose of as unused product.

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**SECTION 14: Transport information**

**DOT (US)**

UN number: 1992 Class: 3 (6.1) Packing group: II  
Proper shipping name: Flammable liquids, toxic, n.o.s. (XXXXXXXXXXXXXXXXXXXXXXXXXXXX)  
Reportable Quantity (RQ):  
Poison Inhalation Hazard: No

**IMDG**

UN number: 1992 Class: 3 (6.1) Packing group: II EMS-No: F-E, S-D  
Proper shipping name: FLAMMABLE LIQUID, TOXIC, N.O.S. (XXXXXXXXXXXXXXXXXXXXXXXXXXXX)

**IATA**

UN number: 1992 Class: 3 (6.1) Packing group: II  
Proper shipping name: Flammable liquid, toxic, n.o.s. (XXXXXXXXXXXXXXXXXXXXXXXXXXXX)

**SECTION 15: Regulatory information**

**SARA 302 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**

Fire Hazard, Acute Health Hazard

**Massachusetts Right To Know Components**

No components are subject to the Massachusetts Right to Know Act.

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know Components**

|              |                      |              |               |
|--------------|----------------------|--------------|---------------|
| 1,1,1,3,3,3- | XXXXXXXXXXXXXXXXXXXX | CAS-No.      | Revision Date |
|              |                      | XXXXXXXXXXXX | 2007-03-01    |

|              |                      |              |               |
|--------------|----------------------|--------------|---------------|
| 1,1,1,3,3,3- | XXXXXXXXXXXXXXXXXXXX | CAS-No.      | Revision Date |
|              |                      | XXXXXXXXXXXX | 2007-03-01    |

**New Jersey Right To Know Components**

|              |                      |              |               |
|--------------|----------------------|--------------|---------------|
| 1,1,1,3,3,3- | XXXXXXXXXXXXXXXXXXXX | CAS-No.      | Revision Date |
|              |                      | XXXXXXXXXXXX | 2007-03-01    |

## SECTION 16: Other information

### Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.1

Revision Date: 01/13/2020

Print Date: 08/29/2020

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CO., LTD.

US version

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August 1, 2014

SDS: B(4) 0.01-2.38% (C)

## SAFETY DATA SHEET

B(4) 0.01-2.38%

### 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: B(4) 0.01-2.38%

RECOMMEND USE: B(4)

MSDS PREPARED BY: Safety & Environment Control Section, B(4)

#### JAPAN

SUPPLIER: B(4) CO., LTD.

SECTION: Manufacturing Technology Division, Safety Control Section

ADDRESS: 150 Nakamaruko, Nakahara-ku, Kawasaki City, Kanagawa Prefecture 211-0012, JAPAN

TELEPHONE NUMBER: +81-44-435-3000

FAX NUMBER: +81-44-435-3020

EMERGENCY RESPONSE: +81-44-435-3001  
+81-44-435-3002

#### USA

SUPPLIER: B(4) INC.

ADDRESS: 190 Topaz Street, Milpitas, California 95035, U.S.A.

TELEPHONE NUMBER: +1-408-956-9901

FAX NUMBER: +1-408-956-9995

EMERGENCY RESPONSE: +1-800-424-9300 (CHEMTREC for U.S.A.)  
+1-703-527-3887 (CHEMTREC for international)

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview:

##### GHS CATEGORY

|                                                                     |             |
|---------------------------------------------------------------------|-------------|
| Acute toxicity oral                                                 | Category 4  |
| Skin corrosion/irritation                                           | Category 1A |
| Serious eye damage/eye irritation                                   | Category 1  |
| Specific target organ systemic toxicity following single exposure   | Category 1  |
| Specific target organ systemic toxicity following repeated exposure | Category 1  |

##### GHS LABEL ELEMENTS

Precautionary pictograms:



Signal word: Danger

Hazard Statement:

- H302 Harmful if swallowed
- H314 Causes severe skin burns and eye damage
- H318 Causes serious eye damage
- H370 Causes damage to organs (nervous system)
- H372 Causes damage to organs (nervous system) through prolonged or repeated exposure

Precautionary Statements:

- Prevention P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P280 Wear protective gloves/protective clothing/eye protection/face

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protection.

Response P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses if present and easy to do. continue rinsing.

P307+P311 IF EXPOSED: Call a POISON CENTER or doctor/physician.

P310 Immediately call a POISON CENTER or doctor/physician.

P314 Get Medical advice/attention if you feel unwell.

P330 Rinse mouth.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P363 Wash contaminated clothing before reuse.

Storage P405 Store locked up.

Disposal P501 Dispose of contents/container in accordance with all national and local regulations.

**OSHA Regulatory State:**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Potential health effects:**

Prolonged skin contact causes damage on the dermal tissue, for it contains basic substance. Eye contact causes irritation. It also may cause burnt, damage on eyesight, or loss of eyesight. Inhalation irritates trachea, lung, throat, or nose. Irritating to mouth, throat, and stomach and may cause severe and permanent damage.

**Potential environmental effects:**

See Section 12: ECOLOGICAL INFORMATION

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

SUBSTANCE/MIXTURE: Mixture  
CHEMICAL NAME (GENERIC NAME): ----  
SYNONYM (S): ----

**INGREDIENT AND COMPOSITION:**

| INGREDIENTS                    | wt%    | CHEMICAL FORMULA                    | CAS NO.   |
|--------------------------------|--------|-------------------------------------|-----------|
| Tetramethyl ammonium hydroxide | <2.38  | N(CH <sub>3</sub> ) <sub>4</sub> OH | 75-59-2   |
| Water                          | >97.62 | H <sub>2</sub> O                    | 7732-18-5 |

**4. FIRST AID MEASURES**

**First aid statements**

**First aid for exposure to eyes:**

Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Rinse eye balls and eyelids thoroughly with water.

Check pH of the lacrimal fluid with litmus papers, if possible, and rinse eyes until the pH becomes normal (neutral).

Start rinsing as soon as possible to rinse away the material thoroughly, since delay of start of rinsing or insufficient rinsing of the exposed eyes may result in loss of sight.

Immediately take the patient to a physician for examination and treatment.

**First aid for exposure to skin:**



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Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Rinse off the skin thoroughly and quickly as possible.

Delay of few seconds may increase injury.

**First aid for inhalation:**

Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Loosen clothing and secure a clear respiratory airway.

Cover the body of the victim with blanket or the like to keep him/her warm and quiet.

If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Immediately take the patient to a physician for examination and treatment.

**First aid for ingestion:**

Do not induce vomiting.

(The risk increase by vomiting because it is corrosive )

If victim is conscious and alert, give 2-4 cupfuls of milk or water.

Never give anything by mouth to an unconscious person.

Immediately take the patient to a physician for examination and treatment.

**Most important symptoms/effects, acute and delayed:**

Prolonged skin contact causes damage on the dermal tissue, for it contains basic substance.

Eye contact causes irritation. It also may cause burnt, damage on eyesight, or loss of eyesight.

Inhalation irritates trachea, lung, throat, or nose.

Irritating to mouth, throat, and stomach and may cause severe and permanent damage.

**Note to physicians**

See Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

---

## 5. FIRE FIGHTING MEASURES

---

**Extinguishing media:**

Proper extinguishing media should be used when fire breaks out in surroundings.

**Specific hazards arising from the chemical:**

Hazardous polymerisation does not occur.

It may decompose upon combustion or in high temperatures, forming carbon oxides, nitrogen oxides.

**Fire fighting instructions:**

Shut off fuel as much as possible.

Evacuate unnecessary personnel to safe area.

Foam should be effective for large fires.

When sprayed, water should be effective for cooling and protection of the fire fighters.

**Protection of firefighters:**

Fire fighters wear proper protective clothing and respiratory protection(SCBA).

Fight fire from protected location or safe distance.

Consider the use of unmanned hose holders or monitor nozzles.

Keep upwind of fire.

---

## 6. ACCIDENTAL RELEASE MEASURES

---

**Personal precautions:**

Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.

Evacuate the leeward personnel.

Ventilate the area.

Quickly shut off all ignition sources.

Equip extinguishers in case of ignition.

Wear proper protective clothings.

Do not touch any damaged container or spills without wearing appropriate protective equipment.

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### **Environmental precautions:**

If safety allows, stop flow at the source.

Prevent spilt solution from entering sewers, watercourses, rivers, or fields.

### **Methods and materials for containment and cleaning up:**

Avoid routing of material to water bodies or streams.

Avoid discharge to drains and to the environment.

When the leak is small, take up spills into an empty container by adsorbing them to dry soil or sand/paper/clothes and neutralize the residual liquid.

When the leak is large, stop the flow with soil or the like and then, channel the flow to a safe place to take up them as much as possible into an empty container by piping them up or by adsorbing them to dry sand or the like.

Neutralize then the residual liquid with an acid (such as diluted hydrochloric acid or diluted sulfuric acid).

---

## **7. HANDLING AND STORAGE**

---

### **Handling:**

Use proper personal protective equipment as indicated in Section 8.

Wear appropriate protective goggles, rubber gloves, protective clothing.

Avoid overflowing, spilling or scattering the material since this is a toxic and corrosive material.

Work from windward.

Evacuate unnecessary personnel to safe area.

Do not breathe mist or spray.

Use a local exhaust to avoid inhalation if vapor or aerosol will be generated.

Seal the container after handling.

Avoid contact with oxidizing agents or reductants.

Relieve internal pressure before opening the container.

Once frozen, defrosting will not bring an even solution.

Solution should not remain in pipings when it is not used.

Water facility should be installed at every place where the solution is used.

It should facilitate measures in case of adhesion or contact with eyes.

Wash hands and face thoroughly after handling.

Install safety shower and eye bath.

Be careful in handling the container, and protect it from damages.

Do not bring contaminated protective tools, such as gloves, to the lounge.

Be careful of personal health after handling.

### **Storage:**

Keep the container sealed, and store in a dark place.

It might freeze when temperature decreases.

Store locked up.

Store in a cool, dry, well-ventilated area away from incompatible substances.

Store away from incompatible materials such as oxidizing agents.

Use containers designated in the United Nations Regulations for Transport of Dangerous Goods.

Do not store or set together with acid, for this is basic.

### **OTHERS:**

Follow all national and local regulations.

---

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

---

### **EXPOSURE GUIDELINES:**

| INGREDIENTS                    | ACGIH TLV        | OSHA PEL         |
|--------------------------------|------------------|------------------|
| Tetramethyl ammonium hydroxide | None established | None established |

### **Engineering controls:**

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When handling, try to use closed apparatuses, equipment or partial ventilator.

**Personal protective equipment (PPE):**

Eye/face protection: Use chemical safety goggles and/or a full face shield where splashing is possible.

Skin protection: Wear appropriate protective clothing to minimize contact with skin. (Impervious protective clothing. Protective boots, Protective apron, etc)

Wear appropriate protective gloves (rubber gloves,alkali resistance)

Respiratory protection: Half or full facepiece respirator, self-contained breathing apparatus, supplied air respirator, etc.

Use respirators approved under appropriate government standards and follow local and national regulations.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

---

|                                               |                     |
|-----------------------------------------------|---------------------|
| Physical State:                               | Liquid              |
| Color:                                        | Colorless           |
| Odor:                                         | Characteristic odor |
| Odor threshold:                               | No data available   |
| pH:                                           | 13.2 (2.38%aq)      |
| Melting point/freezing point:                 | < 0°C               |
| Initial boiling point and boiling range:      | No data available   |
| Flash point:                                  | Non-combustible     |
| Evaporation rate:                             | No data available   |
| Flammability(solid, gas):                     | No data available   |
| Upper/lower flammability or explosive limits: | No data available   |
| Vapour pressure:                              | No data available   |
| Vapour density:                               | No data available   |
| Relative density:                             | 1.00(25°C)          |
| Solubility:                                   | water Soluble.      |
| Partition coefficient; n-octanol/water:       | No data available   |
| Auto-ignition temperature:                    | Non-combustible     |
| Decomposition temperature:                    | No data available   |
| Viscosity:                                    | No data available   |

---

## 10. STABILITY AND REACTIVITY

---

|                                     |                                                               |
|-------------------------------------|---------------------------------------------------------------|
| Reactivity                          | No dangerous reaction known under conditions of normal use.   |
| Possibility of hazardous reactions: | Absorbs carbon dioxide from the air, and then degradation.    |
| Chemical stability:                 | Polymerization will not occur.                                |
| Conditions to avoid:                | Stable at normal temperatures and pressure.                   |
| Incompatible materials:             | Avoid overheat, flames, sparks and other sources of ignition. |
| Hazardous decomposition products:   | Acidic chemicals, oxidizing agents and reductants.            |
|                                     | ammonia, oxides of nitrogen, alcohol, amines                  |

---

## 11. TOXICOLOGICAL INFORMATION (Only data for each component is available.)

---

|                                |                                |
|--------------------------------|--------------------------------|
| Tetramethyl ammonium hydroxide |                                |
| Acute toxicity (oral):         | LD50: 34 50 mg/kg[rat]         |
| Acute toxicity (dermal):       | LD50: 112 mg/kg[rat]           |
| Skin corrosion/irritation:     | Corrosive [rabbit] Category 1  |
| Serious eye damage/irritation: | Category 1                     |
| Respiratory sensitization :    | No relevant information found. |
| Skin sensitization:            | No relevant information found. |

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|                                                                            |                                |
|----------------------------------------------------------------------------|--------------------------------|
| Germ cell mutagenicity:                                                    | No relevant information found. |
| Carcinogenicity:                                                           |                                |
| No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH. |                                |
| Reproductive toxicity:                                                     | No relevant information found. |
| STOST-single exposure:                                                     | Category 1 (nervous system)    |
| STOST-repeated exposure:                                                   | Category 1 (nervous system)    |
| Aspiration hazard:                                                         | No relevant information found. |

---

## 12. ECOLOGICAL INFORMATION (Only data for each component is available.)

---

Tetramethyl ammonium hydroxide

|                                |                                |
|--------------------------------|--------------------------------|
| Ecotoxicity                    |                                |
| Daphnia acute toxicity:        | 48hEC50: 3 mg/L[Daphnia magna] |
| Persistence and degradability: | Readily biodegradable          |
| Bioaccumulative potential:     | No relevant information found. |
| Mobility in soil :             | No relevant information found. |

---

## 13. DISPOSAL CONSIDERATIONS

---

RCRA Hazardous waste ID: #D002  
First neutralize with acid, then treat it with activated sludge using common bacteria being cultivated for more than few weeks.  
All excess material must be collected and transferred to a professional waste disposal company.  
Carefully review information in - **7. HANDLING & STORAGE**.  
Comply with all national and local regulations.

---

## 14. TRANSPORT INFORMATION

---

### U.S. Department of Transportation (DOT):

PROPER SHIPPING NAME: Tetramethylammonium hydroxide, solution

HAZARD CLASS: 8 (Corrosives)

IDENTIFICATION NUMBER: UN1835

PACKING GROUP: III

Keep away from incompatibilities and all sources of ignition.

Follow all national and local regulations.

---

## 15. REGULATORY INFORMATION

---

### <U.S. REGULATION>

#### TSCA (Toxic Substances Control Act):

Each individual component of the subject product is listed on TSCA Inventory of Existing Chemical Substances.

**Section 4(e) - ITC Priority Testing List:** Not regulated

**Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs):** Not regulated

**Section 6 - Restricted Substances:** Not regulated

**Section 8(d) - Health and Safety Reporting:** Not regulated

**Section 12(b) - Export Notification:** Not regulated

#### CERCLA (Comprehensive Environmental Response Compensation and Liability Act)

Hazardous Substances and Reportable Quantities: Not regulated

#### SARA Title III (Superfund Amendments and Reauthorization Act):

302 Extreme Hazardous Substances (EHS) : Not regulated

311/312 Hazard Categories:

Acute Health: Yes

Chronic Health: No

Fire: No

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Pressure: No  
Reactive: No

313 Toxic Chemical (TC) : Not regulated  
**DEA (Drug Enforcement Administration)** Not regulated  
**DHS (Department of Homeland Security)** Not regulated  
<STATE REGULATIONS>  
**CALIFORNI PROPOSITION 65:** Not regulated.

---

## 16. OTHER INFORMATION

---

### **NFPA RATINGS:**

HEALTH=3, FIRE=0, REACTIVITY=0(SCALE 0-4)

### **REFERENCE:**

1. HSDB
2. RTECS
3. The Dictionary of Substance and Their Effects (The Royal Society of Chemistry)
4. Material Safety Data Sheet (of the raw material manufacturer)
5. Poisonous and Deleterious Substances Control Law: Applicable

CREATION DATE: August 1, 2014

REVISION DATE:

---

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

---

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## SAFETY DATA SHEET

B(4)

### 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: B(4)

RECOMMEND USE: B(4)

MSDS PREPARED BY: EHS Division, B(4)

#### JAPAN

SUPPLIER: B(4), LTD.

SECTION: EHS Division

ADDRESS: 150 Nakamaruko, Nakahara-ku, Kawasaki City, Kanagawa Prefecture 211-0012,  
JAPAN

TELEPHONE NUMBER: +81-44-435-3000

FAX NUMBER: +81-44-435-3020

EMERGENCY RESPONSE: +81-44-435-3001  
+81-44-435-3002

#### USA

SUPPLIER: B(4) AMERICA, INC.

ADDRESS: 4600 N.E. Brookwood Parkway, Hillsboro Oregon 97124, U.S.A.

TELEPHONE NUMBER: +1-503-693-7711

FAX NUMBER: +1-503-693-2070

EMERGENCY RESPONSE: +1-800-424-9300 (CHEMTREC for U.S.A.)  
+1-703-527-3887 (CHEMTREC for international)

### 2. HAZARDS IDENTIFICATION

#### **Emergency Overview:**

|                                                                     |                   |
|---------------------------------------------------------------------|-------------------|
| GHS CATEGORY                                                        | Category          |
| Flammable liquids                                                   | No Classification |
| Acute toxicity (oral)                                               | Category 3        |
| Acute toxicity (dermal)                                             | Category 3        |
| Skin corrosion/irritation                                           | Category 2        |
| Serious eye damage/eye irritation                                   | Category 1        |
| Specific target organ systemic toxicity following single exposure   | Category 1        |
| Specific target organ systemic toxicity following single exposure   | Category 2        |
| Specific target organ systemic toxicity following repeated exposure | Category 1        |

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## GHS LABEL ELEMENTS

Precautionary pictograms:



Signal word: Danger

Hazard Statement:

H301 Toxic if swallowed

H311 Toxic in contact with skin

H315 Causes skin irritation

H318 Causes serious eye damage

H370 Causes damage to organs (nervous system)

H371 May cause damage to organs (central nerve system)

H372 Causes damage to organs (nervous system),  
through prolonged or repeated exposure

Precautionary Statements:

Prevention P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. continue rinsing.

P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

P310 Immediately call a POISON CENTER or doctor/physician.

P314 Get Medical advice/attention if you feel unwell.

P330 Rinse mouth.

P332+P313 If skin irritation occurs : Get medical advice/attention.

P361 Remove/Take off immediately all contaminated clothing.

P362 Take off contaminated clothing and wash before reuse.

P363 Wash contaminated clothing before reuse.

Storage P405 Store locked up.

Disposal P501 Dispose of contents/container in accordance with all national and local regulations.

## OSHA Regulatory State:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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**Potential health effects:**

Prolonged skin contact causes damage on the dermal tissue, for it contains basic substance.

Eye contact causes irritation. It also may cause burnt, damage on eyesight, or loss of eyesight.

Inhalation irritates trachea, lung, throat, or nose.

Irritating to mouth, throat, and stomach and may cause severe and permanent damage.

**Potential environmental effects:**

See Section 12: ECOLOGICAL INFORMATION

---

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

---

SUBSTANCE/MIXTURE: Mixture

CHEMICAL NAME (GENERIC NAME): -----

SYNONYM (S): -----

INGREDIENT AND COMPOSITION:

| INGREDIENTS                    | wt%   | CHEMICAL FORMULA                    | CAS NO.      |
|--------------------------------|-------|-------------------------------------|--------------|
| Dimethylsulfoxide              | 55~65 | (CH <sub>3</sub> ) <sub>2</sub> SO  | 67-68-5      |
| Glycol ether                   | 20~30 | Trade Secret                        | Trade Secret |
| Glycol                         | 5~15  | Trade Secret                        | Trade Secret |
| Tetramethyl ammonium hydroxide | 1~3   | N(CH <sub>3</sub> ) <sub>4</sub> OH | 75-59-2      |

---

**4. FIRST AID MEASURES**

---

**First aid statements**

**First aid for exposure to eyes:**

Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Rinse eye balls and eyelids thoroughly with water.

Check pH of the lacrimal fluid with litmus papers, if possible, and rinse eyes until the pH becomes normal (neutral).

Start rinsing as soon as possible to rinse away the material thoroughly, since delay of start of rinsing or insufficient rinsing of the exposed eyes may result in loss of sight.

Immediately take the patient to a physician for examination and treatment.

**First aid for exposure to skin:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Rinse off the skin thoroughly and quickly as possible.

Delay of few seconds may increase injury.

**First aid for inhalation:**

Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Loosen clothing and secure a clear respiratory airway.

Cover the body of the victim with blanket or the like to keep him/her warm and quiet.

If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.



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Immediately take the patient to a physician for examination and treatment.

**First aid for ingestion:**

Do not induce vomiting.

(The risk increase by vomiting because it is corrosive )

If victim is conscious and alert, give 2-4 cupfuls of milk or water.

Never give anything by mouth to an unconscious person.

Immediately take the patient to a physician for examination and treatment.

**Most important symptoms/effects, acute and delayed:**

Prolonged skin contact causes damage on the dermal tissue, for it contains basic substance.

Eye contact causes irritation. It also may cause burnt, damage on eyesight, or loss of eyesight.

Inhalation irritates trachea, lung, throat, or nose.

Irritating to mouth, throat, and stomach and may cause severe and permanent damage.

**Note to physicians**

See Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

---

**5. FIRE FIGHTING MEASURES**

---

**Extinguishing media:**

Dry sand, foam, carbon dioxide, or dry chemical powder extinguisher.

**Specific hazards arising from the chemical:**

Hazardous polymerisation does not occur.

It may decompose upon combustion or in high temperatures, forming carbon oxides, sulphur oxides.

**Fire fighting instructions:**

Shut off fuel as much as possible.

Dry chemical or carbon dioxide should be used for small fires.

Evacuate unnecessary personnel to safe area.

Foam should be effective for large fires.

When sprayed, water should be effective for cooling and protection of the fire fighters. However, use of water may expand the fire.

**Protection of firefighters:**

Fire fighters wear proper protective clothing and respiratory protection(SCBA).

Fight fire from protected location or safe distance.

Consider the use of unmanned hose holders or monitor nozzles.

Keep upwind of fire.

---

**6. ACCIDENTAL RELEASE MEASURES**

---

**Personal precautions:**

Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.

Evacuate the leeward personnel.

Ventilate the area.

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Quickly shut off all ignition sources.

Equip extinguishers in case of ignition.

Wear proper protective clothings.

Do not touch any damaged container or spills without wearing appropriate protective equipment.

**Environmental precautions:**

If safety allows, stop flow at the source.

Prevent spilt solution from entering sewers, watercourses, rivers, or fields.

**Methods and materials for containment and cleaning up:**

Avoid routing of material to water bodies or streams.

Avoid discharge to drains and to the environment.

When the leak is small, take up spills into an empty container by adsorbing them to dry soil or sand/paper/clothes and neutralize the residual liquid.

When the leak is large, stop the flow with soil or the like and then, channel the flow to a safe place to take up them as much as possible into an empty container by piping them up or by adsorbing them to dry sand or the like.

Neutralize then the residual liquid with an acid (such as diluted hydrochloric acid or diluted sulfuric acid).

---

## 7. HANDLING AND STORAGE

---

**Handling:**

Use proper personal protective equipment as indicated in Section 8.

Wear appropriate protective goggles, rubber gloves, protective clothing.

Avoid overflowing, spilling or scattering the material since this is a toxic and corrosive material.

Work from windward.

Evacuate unnecessary personnel to safe area.

Use only in the well-ventilated area.

Do not breathe mist or spray.

Use a local exhaust to avoid inhalation if vapor or aerosol will be generated.

Seal the container after handling.

Shut off all sources of ignition.

Avoid contact with oxidizing agents or reductants.

The electric facility should be explosion proof.

Ground.

When moving the solution through pipings, ground the metallic part of the apparatuses, pipings and containers to prevent generation of electrostatic charges.

Pay attention to ventilation. This vapor is heavier than air, and easily stays at low position.

Do not use direct heater or immersion heater for heating, and watch out when fire is used.

Relieve internal pressure before opening the container.

Solution should not remain in pipings when it is not used.

Water facility should be installed at every place where the solution is used.

It should facilitate measures in case of adhesion or contact with eyes.

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Wash hands and face thoroughly after handling.

Install safety shower and eye bath.

Be careful in handling the container, and protect it from damages.

Do not bring contaminated protective tools, such as gloves, to the lounge.

Be careful of personal health after handling.

**Storage:**

Keep the container sealed, and store in a dark place.

Store locked up.

Store in a cool, dry, well-ventilated area away from incompatible substances.

Store away from incompatible materials such as oxidizing agents.

Use containers designated in the United Nations Regulations for Transport of Dangerous Goods.

Do not store or set together with acid, for this is basic.

Keep away all sources of ignition.

Do not overheat.

Do not let it evaporate without a reason.

Store in well-ventilated area.

**OTHERS:**

Follow all national and local regulations.

---

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

---

**EXPOSURE GUIDELINES:**

| INGREDIENTS                    | ACGIH TLV                               | OSHA PEL         |
|--------------------------------|-----------------------------------------|------------------|
| Dimethylsulfoxide              | None established                        | None established |
| Glycol ether                   | 10ppm(IFV):Inhalable fraction and vapor | None established |
| Glycol                         | None established                        | None established |
| Tetramethyl ammonium hydroxide | None established                        | None established |

**Engineering controls:**

When handling, try to use closed apparatuses, equipment or partial ventilator.

**Personal protective equipment (PPE):**

Eye/face protection: Use chemical safety goggles and/or a full face shield where splashing is possible.

Skin protection: Wear appropriate protective clothing to minimize contact with skin. (Impervious protective clothing. Protective boots, Protective apron, etc)

Wear appropriate protective gloves (rubber gloves,alkali resistance)

Respiratory protection: Half or full facepiece respirator, self-contained breathing apparatus, supplied air respirator, etc.

Use respirators approved under appropriate government standards and follow local and national regulations.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

---

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|                                               |                     |
|-----------------------------------------------|---------------------|
| Physical State:                               | Liquid              |
| Color:                                        | Yellowish brown     |
| Odor:                                         | Characteristic odor |
| Odor threshold:                               | No data available   |
| pH:                                           | No data available   |
| Melting point/freezing point:                 | No data available   |
| Initial boiling point and boiling range:      | No data available   |
| Flash point:                                  | 104 °C              |
| Evaporation rate:                             | No data available   |
| Flammability(solid, gas):                     | No data available   |
| Upper/lower flammability or explosive limits: | No data available   |
| Vapour pressure:                              | No data available   |
| Vapour density:                               | No data available   |
| Relative density:                             | 1.04 (25 °C)        |
| Solubility:                                   | water: Soluble.     |
| Partition coefficient; n-octanol/water:       | No data available   |
| Auto-ignition temperature:                    | No data available   |
| Decomposition temperature:                    | No data available   |
| Viscosity:                                    | No data available   |

---

## 10. STABILITY AND REACTIVITY

---

|                                     |                                                                                                                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Reactivity:                         | No dangerous reaction known under conditions of normal use.<br>Absorbs carbon dioxide from the air, and then degradation. |
| Possibility of hazardous reactions: | Polymerization will not occur.                                                                                            |
| Chemical stability:                 | Stable at normal temperatures and pressure.                                                                               |
| Conditions to avoid:                | Avoid overheat, flames, sparks and other sources of ignition.                                                             |
| Incompatible materials:             | Acidic chemicals, oxidizing agents and reductants.                                                                        |
| Hazardous decomposition products:   | Up on heating (or burning), toxic gasses<br>(w.g., nitrogen oxide, sulfur oxide cyanide) are formed.                      |

---

## 11. TOXICOLOGICAL INFORMATION (Only data for each component is available.)

---

### Dimethyl sulfoxide

|                                |                                |
|--------------------------------|--------------------------------|
| Acute toxicity (oral):         | LD50: 17400~28300 mg/kg[rat]   |
| Acute toxicity (dermal):       | LD50: 40 g/kg[rat]             |
| Acute toxicity (inhalation):   | LD50: > 2.9 g/kg[rat]          |
| Skin corrosion/irritation:     | Mild [rabbit]                  |
| Serious eye damage/irritation: | Mild [rabbit]                  |
| Respiratory sensitization :    | No relevant information found. |

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|                                                                            |                                |
|----------------------------------------------------------------------------|--------------------------------|
| Skin sensitization:                                                        | No relevant information found. |
| Germ cell mutagenicity:                                                    | Ames Test:Negative,            |
| Carcinogenicity:                                                           |                                |
| No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH. |                                |
| Reproductive toxicity:                                                     | No relevant information found. |
| STOST-single exposure:                                                     | No relevant information found. |
| STOST-repeated exposure:                                                   | No relevant information found. |
| Aspiration hazard:                                                         | No relevant information found. |

#### Glycol ether

|                                                                            |                                                          |
|----------------------------------------------------------------------------|----------------------------------------------------------|
| Acute toxicity (oral):                                                     | LD50: 5080~9600 mg/kg[rat]                               |
| Acute toxicity (dermal):                                                   | LD50: > 2000 mg/kg[rat]<br>LD50: 2764~4120 mg/kg[rabbit] |
| Acute toxicity (inhalation):                                               | LC50: > 18 ppm[rat]                                      |
| Skin corrosion/irritation:                                                 | Mild [rabbit]                                            |
| Serious eye damage/irritation:                                             | Severe [rabbit]                                          |
| Respiratory sensitization :                                                | No relevant information found.                           |
| Skin sensitization:                                                        |                                                          |
| Did not cause allergic skin reactions when tested in guinea pigs..         |                                                          |
| Germ cell mutagenicity:                                                    |                                                          |
| In vitro genetic toxicity studies were predominantly negative.             |                                                          |
| Animal genetic toxicity studies were negative.                             |                                                          |
| Carcinogenicity:                                                           |                                                          |
| No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH. |                                                          |
| Reproductive toxicity:                                                     |                                                          |
| In animal studies, did not interfere with reproduction.                    |                                                          |
| However, body weights of newborn animals were decreased.                   |                                                          |
| STOST-single exposure:                                                     | May cause damage to central nerve system                 |
| STOST-repeated exposure:                                                   | No relevant information found.                           |
| Aspiration hazard:                                                         | No relevant information found.                           |

#### Glycol

|                                |                                             |
|--------------------------------|---------------------------------------------|
| Acute toxicity (oral):         | LD50: 22 g/kg[mouse],<br>LD50: 20 g/kg[rat] |
| Acute toxicity (dermal):       | LD50: 20800 mg/kg[rabbit]                   |
| Skin corrosion/irritation:     | No relevant information found.              |
| Serious eye damage/irritation: | No relevant information found.              |
| Respiratory sensitization :    | No relevant information found.              |
| Skin sensitization:            | No relevant information found.              |
| Germ cell mutagenicity:        | Ames Test:Negative,                         |
| Carcinogenicity:               |                                             |

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No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH.

Reproductive toxicity: No relevant information found.  
STOST-single exposure: No relevant information found.  
STOST-repeated exposure: No relevant information found.  
Aspiration hazard: No relevant information found.

#### Tetramethyl ammonium hydroxide

Acute toxicity (oral): LD50: 34~50 mg/kg[rat]  
Acute toxicity (dermal): LD50: 112 mg/kg[rat]  
Skin corrosion/irritation: Corrosive [rabbit] Category 1  
Serious eye damage/irritation: Category 1  
Respiratory sensitization : No relevant information found.  
Skin sensitization: No relevant information found.  
Germ cell mutagenicity: No relevant information found.  
Carcinogenicity:

No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH.

Reproductive toxicity: No relevant information found.  
STOST-single exposure: Category 1 (nervous system)  
STOST-repeated exposure: Category 1 (nervous system)  
Aspiration hazard: No relevant information found.

## 12. ECOLOGICAL INFORMATION (Only data for each component is available.)

### Dimethyl sulfoxide

Ecotoxicity  
Fish acute toxicity: 4 daysLC50: 34 g/L[Pimephales promelas]  
Persistence and degradability: Lower Biodegradable  
Bioaccumulative potential: Not accumulated,  
Partition coefficient: n-octanol/water:-1.35  
Mobility in soil : No relevant information found.

### Glycol ether

Ecotoxicity  
Fish acute toxicity: 96hrLC50: 1300 mg/L[Lepomis macrochirus]  
Daphnia acute toxicity: 48hrEC50:> 100 mg/L[Daphnia magna]  
Algae growth inhibition(acute): 96hrEC50:> 100 mg/L[Scenedesmus]  
Fish chronic toxicity: No relevant information found.  
Daphnia chronic toxicity: No relevant information found.  
Algae growth inhibition(chronic): No relevant information found.  
Persistence and degradability: Biodegradable (BOD:92%)  
Bioaccumulative potential: Aqueous solubility =1000000mg/L  
Partition coefficient: n-octanol/water: 1

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Mobility in soil : No relevant information found.

#### Glycol

##### Ecotoxicity

Fish acute toxicity: No relevant information found.

Persistence and degradability: Readily biodegradable

Bioaccumulative potential: No relevant information found.

Mobility in soil : No relevant information found.

#### Tetramethyl ammonium hydroxide

##### Ecotoxicity

Daphnia acute toxicity: 48hEC50: 3 mg/L[Daphnia magna]

Persistence and degradability: Readily biodegradable

Bioaccumulative potential: No relevant information found.

Mobility in soil : No relevant information found.

---

### **13. DISPOSAL CONSIDERATIONS**

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RCRA Hazardous waste ID: Not regulated

All excess material must be collected and transferred to a professional waste disposal company for incineration.

Carefully review information in - **7.HANDLING & STORAGE**.

Comply with all national and local regulations.

---

### **14. TRANSPORT INFORMATION**

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#### **U.S. Department of Transportation (DOT):**

PROPER SHIPPING NAME: Corrosives liquid, n.o.s. (Tetramethyl ammonium hydroxide)

HAZARD CLASS: 8 (Corrosives)

IDENTIFICATION NUMBER: UN1760

PACKING GROUP: III

Keep away from incompatibilities and all sources of ignition.

Follow all national and local regulations.

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### **15. REGULATORY INFORMATION**

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#### **<U.S. REGULATION>**

##### **TSCA (Toxic Substances Control Act):**

Each individual component of the subject product is listed on TSCA Inventory of Existing Chemical Substances.

**Section 4:** Not regulated

**Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs):** Not regulated

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**Section 6 - Restricted Substances:** Not regulated

**Section 8(d) - Health and Safety Reporting:** Not regulated

**Section 12(b) - Export Notification:** Not regulated

**CERCLA(Comprehensive Environmental Response Compensation and Liability Act)**

Hazardous Substances and Reportable Quantities: Not regulated

**SARA Title III (Superfund Amendments and Reauthorization Act):**

302 Extreme Hazardous Substances (EHS) : Not regulated

311/312 Hazard Categories:

Flammable liquids

Acute toxicity (oral)

Acute toxicity (dermal)

Skin corrosion/irritation

Serious eye damage/eye irritation

Specific target organ systemic toxicity following single exposure

Specific target organ systemic toxicity following repeated exposure

313 Toxic Chemical (TC) : Not regulated

**DEA (Drug Enforcement Administration):** Not regulated

**DHS (Department of Homeland Security):** Not regulated

<STATE REGULATIONS>

**CALIFORNIA PROPOSITION 65:** Not regulated.

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**16. OTHER INFORMATION**

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**NFPA RATINGS:**

HEALTH=2, FIRE=1, REACTIVITY=0(SCALE 0-4)

**SDS STATUS:**

Revised section 1&15.

**REFERENCE:**

1. HSDB
2. RTECS
3. The Dictionary of Substance and Their Effects (The Royal Society of Chemistry)
4. Safety Data Sheet (of the raw material manufacturer)
5. Poisonous and Deleterious Substances Control Law: Applicable

CREATION DATE: July 31, 2015

REVISION DATE: June 13, 2017

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The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and

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the protection of the environment.

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## SAFETY DATA SHEET

Revised on: 8/12/2016

### Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

**Product Identifier:**

Product Name: Ultra Hi h [REDACTED] B(4)  
Common Names: UHP [REDACTED] B(4)  
Product Code: [REDACTED] B(4)

**Relevant identified uses of the substance or mixture and uses advised against:**

For use in adhesive resins, flavors, fragrances, solvents and degreasing agents.

**Details of the supplier of the safety data sheet**

Manufacturer: Florida Chemical Company  
Address: 351 Winter Haven Blvd., NE  
Winter Haven, FL 33881-9432  
1-863-294-8483 (9:00 A.M. to 5:00 P.M. Eastern Time Zone)  
E-mail: [info@floridachemical.com](mailto:info@floridachemical.com)  
Website: [www.floridachemical.com](http://www.floridachemical.com)

**Emergency telephone number**

For emergencies in U.S. call Chemtrec anytime at 1-800-424-9300  
Outside U.S. call Chemtrec Collect at 1-703-527-3887

Only Representative (EU only): ENVIRON Netherlands; Sue Bullock  
Phone: +44 113 245 7552  
Email Address: [sbullock@environcorp.com](mailto:sbullock@environcorp.com)  
Member State of Responsible Person: United Kingdom

### Section 2: HAZARD(S) IDENTIFICATION

**Classification of the substance or mixture**

*In accordance with CLP Regulation (EC) No. 1272 / 2008*





GHS Category Codes and Hazard Classes:

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| 2.6 - Flam. Liq. 3:   | H226 – Highly Flammable Liquid                              |
| 3.10 - Asp. Haz. 1:   | H304 – May be fatal if swallowed and enters airways         |
| 3.2 - Skin Irrit. 2:  | H315 – Causes skin irritation                               |
| 3.4 S - Skin Sens. 1: | H317 – May cause an allergic skin reaction                  |
| 4.1 C - Aq. Chron. 1: | H410 – Very toxic to aquatic life with long lasting effects |

**Label elements**

In accordance with CLP Regulation (EC) No. 1272 / 2008

**Signal Word:** *Danger*

| GHS Pictograms                                                                              | Hazard Statements                                            | Precautionary Statements                                                                                                                                                              |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>GHS02  | H226<br>Flammable<br>Liquid and Vapor                        | <b>P210</b> – Keep away from heat, sparks, open flames, and hot surfaces. No smoking.<br><b>P273</b> – Avoid release into the environment.                                            |
| <br>GHS08  | H304<br>May Be Fatal if Swallowed and Enters Airways         | <b>P280</b> – Wear protective gloves and use eye protection.<br><b>P301 + P310</b> – IF SWALLOWED: Immediately call a POISON CENTER, doctor or physician.                             |
| <br>GHS07  | H315<br>Causes Skin Irritation                               | <b>P302 + P352</b> – IF ON SKIN: Wash with plenty of soap and water.<br><b>P331</b> – Do NOT induce vomiting.<br><b>P332 + P313</b> – If skin irritation occurs: Seek medical advice. |
|                                                                                             | H317<br>May Cause an Allergic Skin Reaction                  |                                                                                                                                                                                       |
| <br>GHS09 | H410<br>Very Toxic to Aquatic Life with Long Lasting Effects | <b>P501</b> – Dispose of contents and their containers in accordance with regional, national, and international regulations.                                                          |

**Additional Hazards:** Contact with eyes may cause redness or irritation.

**Section 3: COMPOSITION/INFORMATION ON INGREDIENTS**

**Substances**

| <u>Component</u>    | <u>CAS #</u> | <u>EC #</u> | <u>% by Wt.</u> |
|---------------------|--------------|-------------|-----------------|
| Orange, sweet, ext. | 8028-48-6    | 232-433-8   | 100.0%          |

ECHA Registration #: 01-2119493353-35-0008

**Section 4: FIRST AID MEASURES**

**Description of first aid measures**

*General information:* As with any chemical, employees should thoroughly wash hands with soap and water after handling this material. If health disorder happens, call for medical help immediately. Immediately remove any clothing soiled by the product.

*Eye Contact:* Remove any contact lenses at once. Flush eyes with water for at least 15 minutes. If irritation persists, seek medical attention.

*Skin Contact:* Wash affected area with copious amounts of soap and water. If irritation develops, seek medical attention.

*Inhalation:* If symptoms of overexposure are experienced, move to fresh air.

*Ingestion:* Seek medical attention immediately. DO NOT induce vomiting. Rinse mouth with water. DO NOT offer water or anything to drink that might cause vomiting. DO NOT administer anything by mouth to an unconscious person. DO NOT leave victim unattended.

**Most important symptoms and effects, both acute and delayed**

Skin irritation and skin sensitization. The product may be fatal if swallowed and enters airways. Inhalation may cause irritation of the nose, throat, and respiratory tract.

**Indication of any immediate medical attention and special treatment needed**

In case of ingestion do not induce vomiting. DO NOT administer anything by mouth to an unconscious person.  
DO NOT leave victim unattended.

## Section 5: FIRE FIGHTING MEASURES

**Extinguishing media**

Suitable Extinguishing Media: Carbon dioxide, foam or dry chemical. Caution: Carbon dioxide will displace air in confined spaces and may create an oxygen deficient atmosphere.

Unsuitable Extinguishing Media: Water.

**Special hazards arising from the substance or mixture**

Do not use water with full jet to prevent fire spreading. In case of fire, the following can be released: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), smoke, soot.

**Advice for firefighters**

Vapors may be irritating to eyes, skin and respiratory tract. Firefighters should wear self-contained breathing apparatus (SCBA) and full fire-fighting turnout gear.

Special hazards: Product contains combustible organic ingredients. Fire may produce dense black smoke containing hazardous products of combustion

Additional information: Cool endangered receptacles with water spray. Collect contaminated fire fighting water separately. It must not enter the sewage system. Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

## Section 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

Use personal protection recommended in Section 8. Product is slippery when spilled. Isolate the hazard area. Deny entry to unnecessary and unprotected personnel.

**Environmental Precautions**

Prevent further leakage or spillage. Keep away from drains, surface- and ground-water and soil. Inform respective authorities in case of seepage into water course or sewage system. Do not allow to enter sewers, surface or ground water.

**Methods and material for containment and cleaning up**

Dike spill area and cap leaking containers as necessary to prevent further spreading of spilled material. Absorb spilled liquid with suitable material such as dirt or sand. Eliminate all ignition sources. Use equipment rated for use around combustible materials. Place in appropriate disposal container. Oil soaked rags may spontaneously combust; place in appropriate disposal container.

**References to other sections:** None

## Section 7: HANDLING AND STORAGE

**Precautions for safe handling**

Use personal protection equipment as mentioned under "exposure controls/personal protection". Keep away from heat, sparks and flame. Protect against electrostatic charges. Open container slowly to release pressure caused by temperature variations. Do not allow this material to come in contact with eyes. Avoid prolonged contact with skin. Use in well-ventilated areas. Do not breathe vapors. Drum lining may occasionally chip and fall to the bottom of container; product should be filtered or strained before blending or repackaging. As with any chemical, employees should thoroughly wash hands with soap and water after handling this material.

**Conditions for safe storage, including any incompatibilities**

Product may be packaged in phenolic-lined steel containers or fluorinated plastic containers. Store in a well ventilated area with proper sprinkler/fire deterrent system. Storage temperature should not exceed the flash point for extended periods of time. Store away from oxidizing agents. Keep container closed when not in use. Air should be excluded from partially filled containers by displacing with nitrogen or carbon dioxide. Do not cut, drill, grind or weld on or near this container; residual vapors may ignite.

**Specific end use(s)**

No further relevant information available.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control Parameters**

Exposure Guidelines

Ingredients with limit values that require monitoring at the workplace: CAS 5989-27-5, (R)-p-mentha-1,8-diene

SDS 

AGW (Germany): 110 mg/m<sup>3</sup>, 20 ppm, 2 (II); DFG, Sh, Y  
AIHA Standard: 8h TWA=30 ppm

Engineering Controls: Normal room ventilation is usually adequate. Provide exhaust ventilation or other engineering controls to keep the airborne concentration below any regulated limits. Keep away from sparks and flames.

### Exposure Controls

General protective and hygienic measures: Use personal protective equipment depending on concentration and amount of hazardous substance. Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of the work. Avoid contact with eyes and skin.

Eye/Face Protection: Tightly sealed goggles according to EN 166:2001

Skin Protection: Preventative skin protection by use of skin-protection agents is recommended. Use protective gloves. Material of gloves: The selection of suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has to be checked prior to the application. Penetration time of glove material: >480 minutes at layer thickness of 0.425 mm (Sol-Vex (37-695) from Ansell).

For the permanent contact gloves made of the following materials are suitable: Nitrile rubber, NBR (e.g. following product: Sol-Vex (37-695) from Ansell). As protection from splashes gloves made of the following materials are suitable: PVC Gloves.

Respiratory Protection: Suitable respiratory protection: Filter class A2 (brown colour). Use the rules for application of respiratory protection systems.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

|                                          |                                                                                |
|------------------------------------------|--------------------------------------------------------------------------------|
| Appearance:                              | Clear Liquid                                                                   |
| Color:                                   | Water-white                                                                    |
| Odor:                                    | Very low orange aroma                                                          |
| Physical State:                          | Liquid at 20°C (68°F)                                                          |
| Relative pH:                             | N/A                                                                            |
| Boiling Point:                           | 176 °C (348.8 °F)                                                              |
| Melting Point:                           | -96 °C (-141 °F)                                                               |
| Specific Gravity                         | 0.835 - 0.845 at 25°C (77°F)                                                   |
| Refractive Index:                        | 1.471 - 1.474 at 20°C (68°F)                                                   |
| Optical Rotation:                        | +102.00 to +105.00° at 25°C (77°F)                                             |
| Vapor Pressure:                          | < 2 mmHg at 20°C (68°F)                                                        |
| Vapor Density:                           | 4.7 (Air = 1)                                                                  |
| Decomposition Temperature:               | N/A                                                                            |
| Viscosity:                               | 0.923 cP at 25°C (77°F)                                                        |
| Flash Point (Closed Cup):                | >43°C (>109 °F)                                                                |
| Flammable Limits:                        | 0.7% LEL; 6.1% UEL                                                             |
| Auto ignition Temperature:               | 237°C (459 °F)                                                                 |
| Solubility in Water:                     | Immiscible                                                                     |
| Evaporation Rate:                        | 0.2 (BuAc=1)                                                                   |
| Partition coefficient (n-octanol/water): | Kow=4.23 (for <span style="background-color: black; color: red;">B(4)</span> ) |

**Other information:** None listed.

*Note: These properties represent a typical sample of the product, but actual values may vary. Certificates of Analysis and Specification Sheets are available upon request.*

## Section 10: STABILITY AND REACTIVITY

### Reactivity

Minimal hazard

### Chemical stability

Stable

### Possibility of hazardous reactions

BHT, an antioxidant, can be added to prevent oxidation. Avoid long-term exposure to air. If storing partially-filled containers, fill headspace with an inert gas such as nitrogen or carbon dioxide.

### Conditions to avoid

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Keep away from heat, sparks and flames.

#### **Incompatible materials**

Strong oxidizing agents and strong acids, including acidic clays, peroxides, halogens, vinyl chloride, and iodine pentafluoride.

#### **Hazardous decomposition products**

Oxides of **B(4)**, which can result from improper storage and handling, are known to cause skin sensitization. No decomposition if stored properly.

## Section 11: TOXICOLOGICAL INFORMATION

### **Information on toxicological effects**

#### *Acute effects*

**B(4)** has been shown to have low oral toxicity ( $LD_{50} > 2$  g/kg) when tested on rats and showed low dermal toxicity ( $LD_{50} > 5$ g/kg) when tested on rabbits. The product may be fatal if swallowed and enters airways. An LC50 is not established. Inhalation may cause irritation of the nose, throat, and respiratory tract. The product is a skin irritant. The product may cause sensitisation by skin contact.

#### *Chronic effects*

This product is not classified for repeated dose toxicity. This product is not classified as a carcinogen by IARC or U.S. ACGIH, NTP or OSHA. This product has not been shown to produce genetic changes when tested on bacterial or animal cells. This product does not contain known reproductive or developmental toxins.

#### *Likely Routes of Exposure*

Inhalation, skin and eye contact

#### *Symptoms:*

Skin irritation and skin sensitisation. The product may be fatal if swallowed and enters airways. Inhalation may cause irritation of the nose, throat, and respiratory tract.

Target organs: Eyes, respiratory system and skin

## Section 12: ECOLOGICAL INFORMATION

### **Toxicity**

According to the official classification this product may be very toxic to aquatic life. However, due to the physical properties of the product (density and volatility) it will not remain in the environment for an extended period of time.

LC50 (fish and daphnia) = 0.1 to 1 mg/L (per REACH dossier)

### **Persistence and degradability**

**B(4)** is classified as readily biodegradable.

### **Bioaccumulative potential**

The geometric mean of three predicted BCF for **B(4)** is 683, i.e.  $BCF < 2000$  L/kg. Consistently the Log Kow is below 4.5. **B(4)** is not bioaccumulative.

### **Mobility in soil**

Citrus extractives volatilize rapidly. Citrus extractives are expected to volatilize from soil or water to the air and oxidize to carbon dioxide in the presence of sunlight.

### **Results of PBT and vPvB assessment**

**B(4)** is readily biodegradable, and with a predicted BCF of 683 L/kg. All aquatic EC50/LC50 are higher than 0.1mg/L, therefore **B(4)** should not be considered environmentally toxic (the official classification includes H410 for long lasting effects on the aquatic toxicity and hence, at least for the time being the substance shall be classified as such). **B(4)** is not PBT.

**Other adverse effects:** None listed.

## Section 13: DISPOSAL CONSIDERATIONS

### **Waste treatment methods**

Recycling is strongly preferred to disposal or burning. If disposing, please do so in accordance with official regulations in your area. Keep in mind that this product should not be disposed along with household garbage. Do not allow this product to reach any sewage waste system, as it may be detrimental to aquatic life. *European waste catalogue: e.g. 02 03 03 wastes from solvent extraction.*

Recommendation: Empty contaminated packaging thoroughly. Packaging may be recycled or repurposed after thorough and proper cleaning. Note that this packaging may not be cleansed and disposed of in the same manner as the product.

Moistened solids (e.g. cloth, pulp, filter panels, binger) can be burnt after consulting with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations. *European waste catalogue: e.g. 15 02 02 Filter and absorption materials contaminated with hazardous agents.*

## Section 14: TRANSPORT INFORMATION

### UN Number

US DOT/ADR/RID: UN2319 (primary), UN1169 (alternate), UN1993 (alternate)  
IMDG: UN2319 (primary), UN1169 (alternate), UN1993 (alternate)  
IATA/ICAO: UN2319 (primary), UN1169 (alternate), UN1993 (alternate)

### UN proper shipping name

US DOT, ADR/RID, IMDG, IATA/ICAO:  
UN2319 – Terpene Hydrocarbons, N.O.S.  
UN1169 – Extracts, Aromatic, Liquid  
UN1993 – Flammable Liquid, N.O.S. ( B(4) )

### Transport hazard class: 3



Label: 3 Flammable Liquid, Symbol fish and tree  
Label/Placard: exception §173.150(f) applies (US DOT only)

### Packing Group: III

**Environmental hazards:** Marine pollutant

**Special precautions for user:** none listed

EMS Number: F-E, S-E

## Section 15: REGULATORY INFORMATION

### Safety, health and environmental regulations/legislation specific for the substance or mixture

The Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

### Chemical safety assessment

A Chemical Safety Assessment has been carried out (attached as Annex).

General information: If a health disorder occurs, receive medical attention immediately. Immediately remove any clothing soiled by the product.

After inhalation: Supply fresh air and to be sure call for a doctor. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: immediately wash with water and soap and rinse thoroughly.

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: Do not induce vomiting; call for medical help immediately.

Applicable CAS numbers:

|            |                                           |
|------------|-------------------------------------------|
| 8028-48-6  | Oran e, sweet, extract                    |
| 5989-27-5  | B(4) (R)-p-mentha-1,8-diene               |
| 94266-47-4 | Citrus terpenes, citrus ext               |
| 68647-72-3 | Terpenes and terpenoids, sweet orange oil |
| 68608-34-4 | Terpenes and terpenoids, citrus oil       |

### Proposition 65

Proposition 65 chemicals are not expected to be found in this product at levels above those naturally present in their agricultural source. Proposition 65 exempts listed naturally occurring chemicals from an obligation to provide a warning or label.

## Section 16: OTHER INFORMATION

This product was produced with Good Manufacturing Practices. It is a by-product of citrus, entirely of natural origin, and to the best of our knowledge contains no artificial flavors, sulfites, nitrites, or pesticide residue exceeding tolerances established by the U.S. FDA. It has not been adulterated or misbranded. It does NOT contain lead, cadmium, mercury, or hexavalent chromium or come in contact with these chemicals since it is a citrus derived essential oil produced by steam/vacuum distillation. Further, it is packaged in food grade containers with inert liners that do NOT contain lead, cadmium, mercury, or hexavalent chromium. It does NOT

contain and is NOT manufactured with any of the Class I or II ozone-depleting substances listed under the United States Clean Air Act of 1990.

### Legend

ACGIH – American Conference of Governmental Industrial Hygienists  
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road  
AIHA – American Industrial Hygiene Association  
BHT – Butylated Hydroxytoluene  
CAS # - Chemical Abstracts Service  
CFR – United States Code of Federal Regulations  
DOT – United States Department of Transportation  
EC# - European Commission (aka EINECS, European Inventory of Existing Commercial chemical Substances)  
ECHA - European Chemicals Agency  
FDA – United States Food and Drug Administration  
GHS - Globally Harmonized System of Classification and Labeling of Chemicals  
GRAS – Generally Recognized as Safe  
IARC – International Agency for Research on Cancer  
IATA – International Air Transport Association  
ICAO – International Civil Aviation Organization  
IMDG – International Maritime Code for Dangerous Goods  
NFPA – National Fire Protection Association  
NIOSH – United States National Institute for Occupational Safety and Health  
NTP – United States National Toxicology Program  
OSHA – United States Occupational Health and Safety Administration  
RID – Regulations Concerning the International Transport of Dangerous Goods by Rail  
TWA –Time Weighted Average

**Caution:** The user should conduct his/her own experiments and establish proper procedures and control before attempting use on critical parts.

DISCLAIMER: While the information and data contained herein are presented in good faith and believed to be reliable, nothing herein shall be deemed to constitute a warranty, express or implied, that the information or data is reliable, accurate, or complete or that the products described herein are merchantable or fit for a particular purpose or that said information, data, or products can be used without infringing the intellectual property rights of third parties. Individuals who receive the products or the information or data relating to the products described herein, must use their own judgment in determining fitness for a particular purpose. Unless otherwise stated, the information or data contained herein relates to the products when not used in conjunction with any other products or materials. Flotek Industries, Inc. and its affiliates (“Flotek”) disclaim all express and implied warranties of merchantability, fitness for a particular purpose, and non-infringement. Flotek shall not be liable for any loss or damage that may occur from the use of the products described herein, including the use of the products in conjunction with other products or materials, or reliance on the data or information described herein.

Prepared by Florida Chemical Company Technical Team

Rev: 12-Aug-16



## SAFETY DATA SHEET

B(4)

Substance No.: B(4)  
Version 4.2Revision Date 04/02/2015  
Print Date 12/29/2015**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : B(4)

Product Use Description : Intermediate for electronic industry

Company : EMD Performance Materials Corp.  
An affiliate of Merck KGaA, Darmstadt Germany  
One International Plaza, Suite 300  
Philadelphia, PA 19113

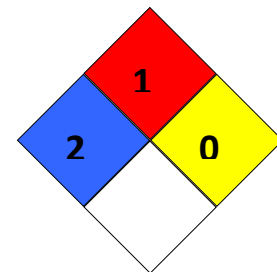
Telephone : 1-888-367-3275

Emergency telephone number : 1-800-424-9300 (CHEMTREC)

**SECTION 2. HAZARDS IDENTIFICATION****Emergency Overview**

**HMIS Classification** : Health hazard: 2  
Flammability: 1  
Reactivity: 0  
PPE:X

**NFPA Classification** : Health hazard: 2  
Fire Hazard: 1  
Reactivity Hazard: 0  
Special Hazards: NONE

**GHS Classification**

Hazard category, Hazard class : Acute toxicity, Category 4, Oral

Hazard category, Hazard class : Acute toxicity, Category 4, Dermal


## SAFETY DATA SHEET

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class  
Hazard category, Hazard class Skin Irritation, Category 2  
class  
Hazard category, Hazard class Serious eye damage/eye irritation, Category 1  
class  
Hazard category, Hazard class Reproductive toxicity, Sub-category 1B  
class

**GHS-Labeling**

Symbol(s) : 

Signal word : Danger

Hazard statements : Harmful if swallowed.  
Harmful in contact with skin.  
Causes skin irritation.  
Causes serious eye damage.  
May damage fertility or the unborn child.

Precautionary statements : **Prevention:**  
Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Keep only in original container.  
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
Wash skin thoroughly after handling.  
Wear protective gloves/ eye protection/ face protection.  
**Response:**  
IF ON SKIN: Wash with plenty of soap and water.  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF exposed or concerned: Get medical advice/ attention.  
Specific treatment (see supplemental first aid instructions on this label).  
If skin irritation occurs: Get medical advice/ attention.  
If eye irritation persists: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.  
Absorb spillage to prevent material damage.  
**Storage:**  
Store in a well-ventilated place. Keep container tightly closed.  
**Disposal:**

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Dispose of contents/ container to an approved waste disposal plant.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

## Hazardous ingredients

| Component                     | CAS-No.  | Weight percent |
|-------------------------------|----------|----------------|
| 1,2-Propanediol               | 57-55-6  | 50 - 60        |
| 1-Methyl-2-pyrrolidone        | 872-50-4 | 40 - 45        |
| Tetramethylammonium hydroxide | 75-59-2  | < 4            |

## SECTION 4. FIRST AID MEASURES

## First aid procedures

- Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.
- Skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
- Eye contact : Remove contact lenses. Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.
- Ingestion : Keep respiratory tract clear. If conscious, drink plenty of water. Never give anything by mouth to an unconscious person. Obtain medical attention.

## SECTION 5. FIREFIGHTING MEASURES

## Flammable properties

Flash point : &gt; 200 °F (&gt; 93 °C)

## Fire fighting

## SAFETY DATA SHEET

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Version 4.2Revision Date 04/02/2015  
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- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Further information : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Cool containers/tanks with water spray.

**Protective equipment and precautions for firefighters**

- Specific hazards during firefighting : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10).

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Environmental precautions : Do not allow entry to drains, water courses or soil. Prevent spreading by use of suitable barriers. Local authorities should be advised if significant spillages cannot be contained.
- Methods for containment / Methods for cleaning up : Wearing appropriate personal protective equipment, contain spill, ventilate area of spill or leak, remove all sparking devices or ignition sources, collect onto inert absorbent, and place in a suitable container.

**SECTION 7. HANDLING AND STORAGE****Handling**

- Handling : Do not breathe vapours or spray mist. Do not get on skin or clothing. For personal protection see section 8. Use only in area provided with appropriate exhaust ventilation.
- Advice on protection against fire and explosion : Keep away from heat and sources of ignition. Take measures to prevent the build up of electrostatic charge. Avoid shock and friction.

**Storage**

- Further information on : Keep container tightly closed in a dry and well-ventilated

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storage conditions place.  
May liberate combustible solvent vapors.  
Store at appropriate temperature. See label for details.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## Exposure Guidelines

## Components with workplace control parameters

| Components             | CAS-No.  | Control parameters | Basis   |
|------------------------|----------|--------------------|---------|
| 1-Methyl-2-pyrrolidone | 872-50-4 | TWA: 10 ppm        | US WEEL |
| 1,2-Propanediol        | 57-55-6  | TWA: 10 mg/m3      |         |

## Engineering measures

Engineering measures : Handle only in a place equipped with local exhaust (or other appropriate exhaust).

## Personal protective equipment

Eye protection : Safety eyewear to protect against splashes.

Hand protection : Solvent-resistant gloves

Skin and body protection : Clothing suitable to prevent skin contact.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.  
Respirator with combination filter for vapour/particulate (EN 141)  
Use NIOSH approved respiratory protection.

Hygiene measures : Observe the usual precautions when handling chemicals.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

## Appearance

Form : liquid

## SAFETY DATA SHEET

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Substance No.: B(4)  
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Color : light yellow  
dark amber

Odor : musty

**Safety data**

Flash point : > 200 °F (> 93 °C)

Vapour pressure : app. 0.2 Torr

Density : 1.035 g/cm<sup>3</sup>

Water solubility : completely miscible

VOC : 1,000 g/l

Loss on drying : > 96 %

**SECTION 10. STABILITY AND REACTIVITY**

Conditions to avoid : Avoid contact with oxidizing agents.  
Avoid contact with strong acids.

Hazardous decomposition products : Hazardous decomposition products due to incomplete combustion  
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

Hazardous reactions : Hazardous polymerisation does not occur.

Chemical stability : Stable under normal conditions.

**SECTION 11. TOXICOLOGICAL INFORMATION****Data for** B(4)

Further information : No toxicological testing was carried out on the preparation.

## SAFETY DATA SHEET

B(4)

Substance No.: B(4)  
Version 4.2Revision Date 04/02/2015  
Print Date 12/29/2015**Data for N-Methyl-2-Pyrrolidone (872-50-4)**

Acute oral toxicity : LD50 Oral: 3,605 mg/kg  
Species: rat  
Source : Supplier MSDS

Acute inhalation toxicity : LC50: > 5.1 mg/l  
Exposure time: 4 h  
Species: rat  
Source : Supplier MSDS

Acute dermal toxicity : LD50 Dermal: 5,000 mg/kg  
Species: rat  
Source : Supplier MSDS

Skin irritation : Species: rabbit  
Result: Skin irritation  
Method: Draize Test  
Source : Supplier MSDS

Eye irritation : Species: rabbit  
Result: Eye irritation  
Method: Draize Test  
Source : Supplier MSDS

**Data for 1,2-Propanediol (57-55-6)**

Acute oral toxicity : LD50: 30,000 mg/kg  
Species: rat

Acute inhalation toxicity : LC50: > Saturation  
Species: rat

Acute dermal toxicity : LD50: > 10,000 mg/kg  
Species: rat

**Data for 25% Tetramethylammonium hydroxide (75-59-2)**

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B(4)

Substance No.: B(4)  
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Acute oral toxicity : LD50: 136 mg/kg  
Species: rat

Acute dermal toxicity : LD50: 25 mg/kg  
Species: Guinea pig

Skin irritation : Result: Corrosive  
Classification: Corrosive

Eye irritation : Result: corrosive  
Classification: Corrosive

---

**SECTION 12. ECOLOGICAL INFORMATION****Data for** B(4)

Additional ecological information : No ecological testing was carried out on the preparation.

**Data for N-Methyl-2-Pyrrolidone (872-50-4)****Ecotoxicity effects**

Toxicity to fish : LC50: > 500 mg/l Exposure time: 96 h

Species: Salmo gairdneri  
static Source : Supplier MSDS

Toxicity to daphnia and other aquatic invertebrates : EC50: > 1,000 mg/l  
Exposure time: 24 h  
Species: Daphnia magna  
Method: DIN 38412 T.11  
Source : Supplier MSDS

Toxicity to algae : EC50: > 500 mg/l  
Exposure time: 72 h  
Species: Green algae  
Method: DIN 38412 T.9  
Source : Supplier MSDS



## SAFETY DATA SHEET

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Toxicity to bacteria : EC50: > 600 mg/l  
Exposure time: 0.5 h  
Species: activated sludge, industrial  
Method: ISO 8192

**Elimination information (persistence and degradability)**

Biodegradability : aerobic BOD in % of theoretical OD  
Result: Readily biodegradable (according to OECD criteria)  
73 %  
Method: OECD 301C; ISO 9408; 92/69/EEC, C.4-F  
Source : Supplier MSDS

**Data for 1,2-Propanediol (57-55-6)****Ecotoxicity effects**

Toxicity to fish : LC50: 50,000 mg/l

Toxicity to daphnia and other aquatic invertebrates : EC50: > 4,850 mg/l

**Data for 25% Tetramethylammonium hydroxide (75-59-2)****Ecotoxicity effects**

Toxicity to fish : LC50: 35.1 mg/l

Toxicity to daphnia and other aquatic invertebrates : LC50: 55.6 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)

Toxicity to algae : EC50: > 1,000 mg/l  
Exposure time: 72 h  
Species: Scenedesmus subspicatus  
Method: OECD 201

## SAFETY DATA SHEET

B(4)

Substance No.: ~~XXXX~~ B(4)  
Version 4.2Revision Date 04/02/2015  
Print Date 12/29/2015**Elimination information (persistence and degradability)**

Biodegradability : Readily biodegradable.

**SECTION 13. DISPOSAL CONSIDERATIONS**

Further information : Dispose of as hazardous waste in compliance with local and national regulations.  
This product would be considered a hazardous waste under RCRA due to high pH unless neutralized prior to disposal.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

RCRA hazardous waste : RCRA number: D002  
Yes -- If it becomes a waste as sold.

**SECTION 14. TRANSPORT INFORMATION****DOT**

Not restricted

**IATA**

UN number : 1835  
Description of the goods : Tetramethylammonium hydroxide, solution  
Class : 8  
Packing group : III  
Labels : 8  
Environmentally hazardous : no  
Additional data for transport : PASSENGER AIRCRAFT SHIPMENT OF CONTAINERS >2.5L NOT PERMITTED. CARGO AIRCRAFT ONLY!, CARGO AIRCRAFT SHIPMENT OF CONTAINERS >5L NOT PERMITTED.

**IMDG**

UN number : 1835  
Description of the goods : TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION  
Class : 8  
Packing group : III

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Substance No.: B(4)  
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Labels : 8  
 EmS Number 1 : F-A  
 EmS Number 2 : S-B

Marine pollutant : no  
 Environmentally hazardous : no  
 Additional data for transport : 18 - Alkalis

**SECTION 15. REGULATORY INFORMATION****Notification status**

**TSCA** : All components of this product are listed on the TSC Inventory.

**DSL** : All components of this product are on the Canadian DSL.

**WHMIS Classification** : D1A: Very Toxic Material Causing Immediate and Serious Toxic Effects  
 D2B: Toxic Material Causing Other Toxic Effects  
 E: Corrosive Material

**Canadian PBT Chemicals** : This product does not contain any components on the DSL that are classified as Persistent, Bioaccumulative and Toxic (PBT) under CEPA.

**CERCLA Reportable Quantity** :  
 This material does not contain any components with a CERCLA RQ.

**Carcinogenicity**

**IARC** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**NTP** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**ACGIH** No component of this product present at levels greater than or

## SAFETY DATA SHEET

B(4)

Substance No.: ~~XXXX~~ B(4) ~~XXXX~~  
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equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**EPCRA - Emergency Planning and Community Right-to-Know Act**

**SARA 302 Reportable Quantity** : This material does not contain any components with a SARA 302 RQ.

**SARA 304 Extremely Hazardous Substances** : This material does not contain any components with a section 304 EHS RQ.

**SARA 313:** The following components are subject to reporting levels established by SARA Title III, Section 313:

**SARA 313 Components** : 1-Methyl-2-pyrrolidone 872-50-4

**Clean Air Act**

**Ozone-Depletion Potential** : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

**US. Clean Air Act - Hazardous Air Pollutants (HAP)**

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

**US. Clean Air Act Section 112(r); Regulated toxic and flammable substances for Accidental Release Prevention - 40 CFR 68.130 (subpart F)**

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

**US. Clean Air Act Section 111 SOCM I Intermediate or Final Volatile Organic Compounds (VOC) - 40 CFR part 60.489**

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

1,2-Propanediol 57-55-6

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

## SAFETY DATA SHEET

B(4)

Substance No.: B(4)  
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This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

**US State Regulations**


|                                               |                                                                                                                                 |          |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Massachusetts Right To Know Components</b> | : 1-Methyl-2-pyrrolidone                                                                                                        | 872-50-4 |
| <b>Pennsylvania Right To Know Components</b>  | : 1,2-Propanediol                                                                                                               | 57-55-6  |
|                                               | 1-Methyl-2-pyrrolidone                                                                                                          | 872-50-4 |
| <b>New Jersey Right To Know Components</b>    | : 1,2-Propanediol                                                                                                               | 57-55-6  |
|                                               | 1-Methyl-2-pyrrolidone                                                                                                          | 872-50-4 |
|                                               | Tetramethylammonium hydroxide                                                                                                   | 75-59-2  |
| <b>California Prop. 65 Components</b>         | : WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. |          |
|                                               | 1-Methyl-2-pyrrolidone                                                                                                          | 872-50-4 |

**SECTION 16. OTHER INFORMATION**

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. For any sub-heading within any section not addressed herein, no relevant information is determined or applicable. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications.

B(4) and the B(4) logo are trademarks or registered trademarks of Merck KGaA, Darmstadt, Germany or its affiliates.

**1. PRODUCT AND COMPANY IDENTIFICATION**

Product Identifier: ™  
General Use: Post-Etch Residue Remover  
Product Description: Aqueous Organic Blend  
Revision and Date: Revision O, October 30, 2006

**MANUFACTURER**  
 Technology, Inc.  
2520 Barrington Court  
Hayward, CA 94545-1133  
(510) 784-9105

**EMERGENCY PHONE NUMBERS**  
(800) 424-9300  
CHEMTREC  
24 hours/day, 7 days/week

**2. COMPOSITION / INFORMATION ON INGREDIENTS**

|                           | <u>Wt. %</u> | <u>CAS Registry #</u> |
|---------------------------|--------------|-----------------------|
| 2-(2-Aminoethoxy) Ethanol | Proprietary  | 929-06-6              |
| Hydroxylamine             | Proprietary  | 7803-49-8             |
| Catechol                  | Proprietary  | 120-80-9              |

|                           | EXPOSURE LIMITS 8 hrs. TWA (ppm) |                  |                   |
|---------------------------|----------------------------------|------------------|-------------------|
|                           | <u>OSHA PEL</u>                  | <u>ACGIH TLV</u> | <u>DUPONT AEL</u> |
| 2-(2 Aminoethoxy) Ethanol | None                             | None             | None              |
| Hydroxylamine             | None                             | None             | 0.05              |
| Catechol                  | None                             | 5 (Skin)         | None              |

**3. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

Yellow-Orange to Reddish-Orange liquid with an amine odor. Causes burns. May cause allergic skin reaction.

## POTENTIAL HEALTH EFFECTS

### INHALATION

May cause respiratory tract irritation. Prolonged or repeated exposure may cause difficulty in breathing, headache, nausea, vomiting, drowsiness, cyanosis, and lung damage.

### EYE CONTACT

Causes burns.

### SKIN CONTACT

Causes burns. Prolonged or repeated exposure may cause allergic skin reaction in some people.

### INGESTION

Swallowing this material causes burns to mouth, throat, and stomach.

### TARGET ORGANS

Skin, eyes, liver, kidney, blood, stomach, lungs, and central nervous system

### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Overexposure may aggravate existing cardiovascular or respiratory conditions, blood disorders, or dermatitis.

### CARCINOGENICITY

|                                    |                                           |
|------------------------------------|-------------------------------------------|
| National Toxicology Program (NTP): | Not listed                                |
| IARC Monographs:                   | Contains catechol which is listed as (2B) |
| OSHA:                              | Not listed                                |
| ACGIH:                             | Contains catechol which is listed as (A3) |

## POTENTIAL ENVIRONMENTAL EFFECTS

None have been identified.

## 4. FIRST AID MEASURES

### INHALATION

Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician.

### EYE CONTACT

Immediately flush eyes with water for at least 15 minutes. Have eyes examined and treated by a physician.

## SKIN CONTACT

Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. If redness or irritation occurs, seek medical attention.

## INGESTION

Do not induce vomiting. Seek immediate medical attention. Maintain an open airway. Administer artificial respiration if necessary. Never give anything by mouth to an unconscious person.

## NOTE TO PHYSICIAN

Evacuation of stomach contents should be done by means least likely to cause aspiration, such as gastric lavage after endotracheal intubation.

## 5. FIRE FIGHTING MEASURES

|                                        |                                                    |
|----------------------------------------|----------------------------------------------------|
| Flashpoint and Method                  | >212°F (>100°C)/Seta Flash<br>Closed Cup ASTM 3278 |
| Flammable Limits in Air<br>% by volume | Lower: Not available<br>Upper: Not available       |
| Autoignition Temperature               | 644-662°F (340-350°C)                              |
| Extinguishing Media                    | Water spray, foam, carbon dioxide, dry<br>chemical |


## UNUSUAL FIRE AND EXPLOSION HAZARDS

Toxic vapors may be given off at high temperatures.

## FIRE FIGHTING INSTRUCTIONS

Use water spray to cool containers and fire exposed surfaces. Shut off fuel to fire if possible to do so without hazard.

## FIRE FIGHTING EQUIPMENT

Wear full protective clothing with self-contained positive pressure breathing apparatus. If there is potential for skin exposure to ™, see Section 8 of this MSDS.

## HAZARDOUS COMBUSTION PRODUCTS

Carbon monoxide, NOx, Ammonia



## 6. ACCIDENTAL RELEASE MEASURES

### SPILL OR LEAK PROCEDURES

Evacuate area and keep personnel upwind. Cut off any source of ignition and ventilate the spill area. Contain spill with absorbent material. Transfer absorbent and other contaminated materials to a UN approved HDPE covered and vented container for disposal. Consult with Federal, State, and local regulatory agencies to determine acceptable clean-up levels. Comply with Federal, State, and local regulations on reporting releases. **Wipes and absorbent materials that are used to clean up small spills must be saturated with water before disposal into HDPE drums. Not doing so may cause smoldering and presents a fire hazard. Solid materials contaminated with B(4)™ should be segregated from other wastes, especially flammable and combustible wastes.**

## 7. HANDLING AND STORAGE

### STORAGE TEMPERATURE

Storage in a dry, well-ventilated area at 27° to 120°F (-3° to 49°C) is recommended. Storage at temperatures down to -20°C will not damage the product and is not expected to cause any safety concerns.

### GENERAL

Keep in original vented containers.  
Keep away from strong oxidizing agents, acids, and ketones.  
Prevent skin and eye contact.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### PERSONAL PROTECTION

#### RESPIRATORY PROTECTION

No respiratory protection is required when this material is handled under proper ventilation, such as a wet bench or fume hood. If proper ventilation is not available, use a NIOSH approved full-face respirator with canisters or cartridges specifically approved for ammonia. Whenever cartridges or canister respirators are used, ensure the frequent changing of the filter element. Use a supplied air respirator when in doubt of the atmospheric concentration. Consult 29 CFR 1910.134 regarding use of respirators.

#### PROTECTIVE CLOTHING

Take all precautions to prevent skin contact. Wear Nitrile, Neoprene or Latex clothing and gloves, and chemical resistant boots when there is a probability of liquid contact.

#### EYE / FACE PROTECTION

Wear chemical goggles or use chemical goggles under face shield when there is a probability of liquid contact.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

|                      |                      |                 |                                 |
|----------------------|----------------------|-----------------|---------------------------------|
| Vapor Pressure:      | Not available        | Freezing Point: | Not available                   |
| Vapor Density:       | >1 (Air = 1)         | Appearance:     | Yellow-orange to Reddish-orange |
| Specific Gravity:    | 1.05-1.12            | Boiling Range   | 230-430°F (110-221°C)           |
| Evaporation Rate:    | <1 (Butyl Acetate=1) | Odor:           | Amine                           |
| Solubility in Water: | Complete             | Physical State: | Liquid                          |
| pH:                  | 11.5-12.5            |                 |                                 |

### 10. STABILITY AND REACTIVITY

#### GENERAL

This product is stable at normal temperatures and conditions of storage.

#### INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID

Iron and heavy metal salts, strong oxidizing agents, acids and ketones

#### HAZARDOUS DECOMPOSITION

Carbon monoxide, NO<sub>x</sub>, Ammonia

#### HAZARDOUS POLYMERIZATION

Will not normally occur.

### 11. TOXICOLOGICAL INFORMATION

#### DATA FOR ™

##### INHALATION

LC<sub>50</sub>, rat (4 hr): >1.74 mg/l, the highest attainable concentration.

##### EYE CONTACT

Vapors cause irritation, based on human experience.

**DATA FOR [REDACTED]™ (CONT.):**

**SKIN CONTACT**

LD<sub>50</sub>, rabbit: 1264 mg/kg, harmful, cyanosis was noted. Considered corrosive from *in vitro* assay results. Primary irritation index: 4.6/8.0, moderately irritating. Skin sensitizer in guinea pigs.

**INGESTION**

LD<sub>50</sub>, rat: 576 mg/kg, harmful, cyanosis was noted.

**GENOTOXICITY**

Not mutagenic in bacterial cells in culture.

**TARGET ORGANS**

Skin, eyes, liver, kidneys, blood, stomach, lungs, respiratory tract, spleen, and central nervous system

**DATA FOR 2-(2-AMINOETHOXY) ETHANOL, A COMPONENT OF [REDACTED]™:**

**EYE CONTACT**

FHSA score >80/110, severely irritating

**TARGET ORGANS**

Eyes and Skin

**DATA FOR HYDROXYLAMINE, A COMPONENT OF [REDACTED]™:**

**EYE CONTACT**

Moderately irritating

**SKIN CONTACT**

Occupational exposure has been associated with dermatitis. Reported to be a skin sensitizer. Can cause the formation of methemoglobin and produce cyanosis.

**GENOTOXICITY**

Hydroxylamine and its salts have been tested in a number of short-term assays using cells in culture, insects, or plants. A mixture of positive and negative results has been found.

**TARGET ORGANS**

Skin, eyes, respiratory tract, blood, and spleen

**DATA FOR HYDROXYLAMINE, A COMPONENT OF [REDACTED]™ (CONT.):**

**CHRONIC TOXICITY**

Drinking water study (rat, sulfate salt, 24 months):  
LOAEL = 0.2-0.4 mg/kg, the lowest doses tested  
Increased incidence of spleen tumors, hyperplasia in the spleen, increased spleen weights, hemolytic anemia, and hemosiderin storage in tissues noted.

**DATA FOR CATECHOL, A COMPONENT OF [REDACTED]™:**

**INHALATION**

Occupational exposure has been associated with chronic inflammation of the upper respiratory tract.

**EYE CONTACT**

Corrosive

**SKIN CONTACT**

Irritation and sensitization have been reported in humans.

**GENOTOXICITY**

Tests for point mutations in isolated cells that involve direct effects on DNA have been negative when performed by standard EPA acceptable protocols. Some test for chromosomal effects have been positive. Studies that looked for direct effects on DNA in the rat stomach were negative. The results suggest that catechol does not affect DNA directly.

**TARGET ORGANS**

Liver, kidneys, blood, stomach, lungs, and central nervous system

**CHRONIC TOXICITY**

Dietary study (rat, 104 weeks):  
LOAEL = 1600 ppm in diet (~80 mg/kg)  
Decreased body weights, increased relative liver weights, stomach hyperplasia, and benign stomach tumors noted; malignant stomach tumors and stomach ulcers also found at 8000 ppm in diet (~400 mg/kg). Evidence suggests that doses too low to cause stomach toxicity will not produce tumors.

Dietary study (mouse, 96 weeks):  
LOAEL = 8000 ppm in diet (~1200 mg/kg), the only dose tested  
Decreased body weights, increased relative liver weights, stomach hyperplasia, and benign stomach tumors noted.

**12. ECOLOGICAL INFORMATION**

No data are available for [REDACTED]™. Data for the components are summarized below.

**DATA FOR 2-(2-AMINOETHOXY) ETHANOL, A COMPONENT OF ~~B(4)~~™:**

**FATE**

Bioconcentration in aquatic organisms, adsorption to suspended solids, and evaporation not expected to be important processes in water. Expected to biodegrade rapidly, with a half-life for ultimate biodegradation of weeks. Predicted to leach readily in soil, with negligible adsorption. In air, removal expected rapidly by reaction with hydroxyl radicals, with a half-life of less than 2 hr.

**AQUATIC TOXICITY**

Not expected to be harmful to aquatic organisms.  
48 hr EC/LC<sub>50</sub> Fathead minnow: 1-10 mg/L, toxic  
72 hr EC/LC<sub>50</sub> Algae: 0.72 mg/L, very toxic.

**DATA FOR HYDROXYLAMINE, A COMPONENT OF ~~B(4)~~™:**

**FATE**

Rapidly oxidized to nitrates and broken down to nitrous oxide and ammonia in water. Nitrites formed by many bacteria in soil. Converted to oximes by reaction with carbonyl groups.

**AQUATIC TOXICITY**

48 hr EC/LC<sub>50</sub> Daphnia magna: 1.62 mg/L, toxic  
48 hr EC/LC<sub>50</sub> Fathead minnow: 1-10 mg/L, toxic  
72 hr EC/LC<sub>50</sub> Algae: 0.72 mg/L, very toxic

**DATA FOR CATECHOL, A COMPONENT OF ~~B(4)~~™:**

**FATE**

Biodegradation demonstrated under anaerobic conditions. Expected to undergo direct and indirect photolysis. Not expected to adsorb to sediments, evaporate, or bioconcentrate. Should be partially ionized in water and moist soils. Expected to be highly mobile in soils. Not expected to evaporate or hydrolyze in soils. Will exist mainly as vapor in air, where photodegradation is expected with a half-life of 0.6 days.

**AQUATIC TOXICITY**

96 hr LC<sub>50</sub> Fathead minnow: 3.5 mg/L, toxic,  
96 hr LC<sub>50</sub> Sand shrimp: >44 mg/L, no more than harmful.  
96 hr LC<sub>50</sub> Rainbow trout: 8.9 mg/L, toxic  
When green algae were exposed to catechol for 1 to 14 days, growth was inhibited at concentrations of 20 mg/L.

## 13. DISPOSAL CONSIDERATIONS

### DISPOSAL METHODS

Consult 40 CFR, Parts 261 and 268, State, and local regulations for guidance on disposal of this product. Incineration at a facility with appropriate permits or authorizations is the recommended method of disposal. Spent [REDACTED]™ should be segregated from ketones and gamma butyrolactone. **Wipes and absorbent materials that are used to clean up small spills must be saturated with water before disposal into HDPE drums. Not doing so may cause smoldering and presents a fire hazard. Solid materials contaminated with [REDACTED]™ should be segregated from other wastes, especially flammable and combustible wastes. For transportation of spent [REDACTED]™ use only vented drums of HDPE or plastic lined steel drums.**

### CONTAINER DISPOSAL

Empty containers retain product residue. Observe all hazard precautions. Keep away from heat, sparks, and flames. Do not distribute, make available, or reuse empty containers except for storage and shipment of original product. Remove all hazardous product residue, and puncture or otherwise destroy empty containers before disposal. Consult 40 CFR, Parts 261 and 268 for guidance on disposal.

## 14. TRANSPORT INFORMATION

### DOT/IMO/ICAO/IATA

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Proper shipping name  | CORROSIVE LIQUID, BASIC, ORGANIC,<br>N.O.S. (CONTAINS 2-(2-AMINOETHOXY)<br>ETHANOL) |
| Hazard Class          | 8                                                                                   |
| Identification number | UN 3267                                                                             |
| Packing group         | II                                                                                  |
| Labels required       | Corrosive                                                                           |
| IMDG page number      | Not available                                                                       |

[REDACTED]™ cannot ship via air due to the vented cap.

## 15. REGULATORY INFORMATION

### TSCA (TOXIC SUBSTANCE CONTROL ACT)

Components of this product are listed on the TSCA Inventory.

## PROPOSITION 65

WARNING. This product contains a chemical known to the State of California to cause cancer.

## SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

|                           |                                                                                                                                                                                                                        |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 311/312 Hazard Categories | Acute, chronic                                                                                                                                                                                                         |
| 313                       | This product contains catechol at an upperbound concentration of 5% which is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372. |

## CERCLA (COMPREHENSIVE RESPONSE COMPENSATION AND LIABILITY ACT)

Not reportable

We recommend that you contact local authorities to determine if there may be other local reporting requirements.

## 16. OTHER INFORMATION

Because the health effects from exposure to B(4)™ have not been fully evaluated, exposure should be kept to the lowest level possible. This material is for industrial use and should only be used under the supervision of a technically qualified individual.

## LABEL INFORMATION

### NFPA CODES

|                 |           |
|-----------------|-----------|
| Health          | 3         |
| Fire            | 1         |
| Reactivity      | 0         |
| Specific Hazard | Corrosive |

### REVISION SUMMARY

|        |                   |
|--------|-------------------|
| Rev. O | Revision of label |
|--------|-------------------|

|              |                                                               |
|--------------|---------------------------------------------------------------|
| Prepared by: | Steven C. Dawson, CIH<br>Manager, Industrial Hygiene & Health |
|--------------|---------------------------------------------------------------|

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