



TREATMENT PLANT APPROVAL 08/2024
Plumbing and Drainage Regulation 2019, part 4.

Approval

1. The **WWS MARK IV** (“the system”) described in the Specifications and Drawings in the attached Schedule and manufactured by **Houston Utility Service Pty Ltd** (ABN 44 163 768 652) (“the manufacturer”) has been assessed in accordance with:
 - (a) sections 34 and 35 of the *Plumbing and Drainage Regulation 2019* and
 - (b) the Queensland Plumbing and Wastewater Code published on 26 October 2017.
2. A transitional Treatment plant Approval (TPA) is granted for a **secondary quality** wastewater treatment system, subject to compliance by the manufacturer/supplier with the requirements of the *Plumbing and Drainage Act 2018* and the conditions of approval detailed below.
3. As no changes have been made to the system this approval replaces the previous approval, TPA 14/2021.
4. This approval, the conditions of approval, and the Schedule comprise the entire TPA document.
5. Any modification by the manufacturer/supplier to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

Conditions of approval

6. The manufacture, installation, operation, service, and maintenance of the system must be in conformity with the conditions of this TPA.
7. The **secondary quality** wastewater treatment system, which is an example of the approved systems, may only be used on premises that generate per day:
 - a) a maximum hydraulic loading of 5000 L, and
 - b) a maximum organic loading of 1300 g BOD₅.
8. The system must continue to meet the requirements of a **secondary quality** wastewater treatment system, producing the following effluent quality —
 - a) 90% of the samples taken must have a BOD₅ less than or equal to 20 g/m³ with no sample greater than 30 g/m³.
 - b) 90% of the samples taken must have total suspended solids less than or equal to 30 g/m³ with no sample greater than 45 g/m³.
 - c) 90% of the samples taken must have a thermotolerant coliform count not exceeding 200 organisms per 100 mL with no sample exceeding 1000 organisms per 100 mL.
 - d) Total chlorine concentration must be between 0.5 g/m³ and 2.0 g/m³ in four (4) out of five (5) samples taken.
9. Each system must be serviced in accordance with the details supplied in the owner’s operation and maintenance manual.
10. This approval does not extend, apply to, or include the land application system used in conjunction with an approved system installed on premises.

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11. Each system must be supplied with —

- (a) a copy of this Treatment Plant Approval document;
- (b) details of the system;
- (c) instructions for authorised persons for its installation;
- (d) a copy of the owner's manual to be given to the owner at the time of installation; and
- (e) detailed instructions for authorised service personal for its operation and maintenance.

12. At each anniversary of the Treatment Plant Approval date, the supplier must submit to the Chief Executive a list of all systems installed in Queensland during the previous 12 months. Where the Chief Executive is notified of any system failures the Chief Executive may randomly select several installed systems for audit. The Chief Executive will notify the supplier's nominated NATA accredited laboratory which systems are to be audited for BOD⁵ and TSS. The sampling and testing of the selected systems, if required, is to be done at the supplier's expense. The following results must be reported to the Chief Executive:

- a) Address of premises;
- b) Date inspected and sampled;
- c) Sample identification number;
- d) BOD⁵ for influent and effluent; and
- e) TSS for influent and effluent.

13. The Chief Executive may, by written notice, cancel this approval if the manufacturer/supplier fails —

- a) to comply with one or more of the conditions of approval; or
- b) within 30 days, to remedy a breach, for which a written notice been given by the Chief Executive.

14. This approval may only be assigned with the prior written consent of the Chief Executive.

15. This approval expires on **1 January 2025** unless cancelled earlier in accordance with paragraph 14 above.

Lindsay Walker



Director
Plumbing, Drainage and Special Projects
Date approved: 26 April 2024

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SCHEDULE

WWS MARK IV

Attachment 1 - WWS MARK IV On-site Standing Operating Procedure

Attachment 2 - WWS MARK IV Specifications and schematic diagrams

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Attachment 1 - WWS MARK IV On-site Standing Operating Procedure



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Houston Standard Operating Procedure WWR MARK IV

Rev No	Prepared By (GM-Business Development)	Date	Stakeholder Review (Superintendent / HSE)	Date	Operations Manager Approval	Date	Reason for Change (new SOP / post incident / new equipment / post action review)
01	Scott Couacaud	28/01/2014					New SOP for Daily Checks on Houston WWR MARK IV

PURPOSE

- The purpose of this Standard Operating Procedure is to identify the process steps, hazards involved with each process step and the control measures implemented for **Houston Daily WWR MARK IV Checks**. Hazards that are not included in this SOP but become identified must be documented and a formal Job Hazard Analysis (JHA) carried out. The JHA can form part of this SOP as an attachment. Employees / Subcontractors involved in the work activity must be instructed in this SOP prior to beginning any work activity and must also be involved in any further JHA process of identifying further hazards and identifying control measures.

SAFETY EQUIPMENT AND PPE

- The following safety equipment and PPE are to be utilised at all times while carrying out the work activity.

- Safety Boots
- Long Sleeved Cotton Shirt and Trousers
- Safety Glasses / Goggles
- PVC Impervious Gloves (Long sleeve)
- Antibacterial Hand Sanitiser
- Face Shield



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PROCESS TABLE

- 3 The process table contains the Process Steps, Potential Hazards and Control Measures for **Houston WWR MARK IV Checks**. All personnel involved in the activity must be instructed on the contents process table prior to the commencement of the activity. All personnel and subcontractors are required to acknowledge in writing that they have received process/safety instruction in the activity by signing EWF-4039-SA-01801 Sign off Sheet.

This SOP does not necessarily cover all possible hazards associated with the procedure and should be used in conjunction with other references such as OEM (Original Equipment Manufacture). It is designed to be used as a basic Safety Operating Procedure and to act as a prompt to users prior to completing the task.

LEGEND

- Black Text represents (Generic)
- Blue Text represents (Rig Specific)
- Green Text represents: (proposed changes generated from site)
- Red Text represents (Important Information)
- Purple Text represents (REDP Task Book Reference) e.g. TB1 S14 B

PRELIMINARY	
<ul style="list-style-type: none"> • Meeting / Permit Requirements (eg. Excavation, PTW, Con Space) 	<ul style="list-style-type: none"> ▪ ECM - Daily Houston WWR MARK IV Check form to be completed on a daily basis
<ul style="list-style-type: none"> • Assessment Needs (eg. Haz Chem Assessments-MSDSs) 	<ul style="list-style-type: none"> ▪ MSDS and RA Awareness for Liquid Chlorine and antibacterial hand sanitiser ▪ Eye Wash station availability
<ul style="list-style-type: none"> • Special Notes 	<ul style="list-style-type: none"> ▪ Mobile waste water recycle unit WWR MARK IV-Mark IV Maintenance and Operatos Manual to be reviewed prior to completing any tasks on WWR MARK IV ▪ 30 day period for commissioning of WWR MARK IV, during this time sock change is required daily and weekly post commissioning stage. (Or as directed otherwise from WWR MARK IV expert).

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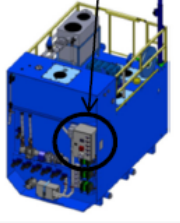


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Process Step	Potential Hazards	Control Measures	Responsible Person/s
<p>1. Collect relevant PPE, sock filter (if required) and waste disposal bin suitable for the disposal of the filter sock.</p>	<ul style="list-style-type: none"> ▪ Cross contamination from WWR MARK IV to other areas of camp 	<ul style="list-style-type: none"> ▪ PPE must be worn at all times when performing daily checks. ▪ WWR MARK IV checks to be conducted at end of shift 	<ul style="list-style-type: none"> ▪ Camp Manager ▪ Housekeeper
<p>2. Check alarm system is not signaling a malfunction and that the siren is switched on. If alarm is signaling press the the alarm reset, Identify on the check sheet if alarm system is signalling with the codes below. Investigate the alarm cause and advise camp manager.</p> <ul style="list-style-type: none"> • POF – Pump out Fail • BTHA – Balance tank high alarm • DTHA – Disinfection tank high alarm • SPFA – Sludge pump fail alarm • VFD Fault 	<ul style="list-style-type: none"> ▪ Checks not completed correctly ▪ Uncontrolled and/or unplanned release of untreated effluent ▪ Equipment Damage ▪ History of alarm alerts not available for servicable information 	<ul style="list-style-type: none"> ▪ Alarm system and guages positioned on front switchboard  <ul style="list-style-type: none"> ▪ Operatos Manual to be reviewed prior to completing any tasks on WWR MARK IV ▪ Follow trouble shooting guide to rectify alarm signal ▪ Contact Houston for unresolved issues 	<ul style="list-style-type: none"> ▪ Camp Manager ▪ Housekeeper ▪ Houston
<p>3. Enter metered liquid flow from previous day into ECM Daily Houston checks form</p>	<ul style="list-style-type: none"> ▪ Information not accurate 	<ul style="list-style-type: none"> ▪ Checks are to be completed around the same time each day 	<ul style="list-style-type: none"> ▪ Housekeeper
<p>4. Check chlorine level in drum, replace drum when getting low</p>	<ul style="list-style-type: none"> ▪ Chemical exposure to class 8 substance – chlorine ▪ Incorrect storage of class 8 substances ▪ Eye wash station/bottle not working ▪ Manual handling injury from lifting 20L drum ▪ Slip, trip, fall on congested area / hoses ▪ Damage to automatic dispenser hose for chlorine 	<ul style="list-style-type: none"> ▪ Additional Chlorine is stored in Class 8 storage cabinet contained on WWR MARK IV skid ▪ MSDS available ▪ Eye wash station/bottle positioned on WWR MARK IV skid, unit check completed prior to conducting change of drum ▪ Additional PPE required face shield, goggles, protective clothing and long 	<ul style="list-style-type: none"> ▪ Housekeeper

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		<ul style="list-style-type: none"> sleeve chemical gloves. ▪ 2 person lift of drum ▪ Ensure area is clear of trip hazards prior to conducting task ▪ Ensure dispenser hose is clear of drum before changing over 	
5. Conduct a visual inspection of all connections for leaks	<ul style="list-style-type: none"> ▪ Uncontrolled and/or unplanned release of untreated effluent 	<ul style="list-style-type: none"> ▪ Daily monitoring ▪ Report all leaks and/or damage to management 	<ul style="list-style-type: none"> ▪ Housekeeper ▪ Camp Manager
6. Perform visual inspection of sprinkler and hose for kinks to ensure fluid is exiting the sprinkler properly. Check treated water is not pooling at the sprinkler. Move sprinkler if pooling is observed.	<ul style="list-style-type: none"> ▪ Damage to pump from hose blockage / kink ▪ Uncontrolled and/or unplanned release of untreated effluent ▪ Sprinkler release and contamination of effluent ▪ Pooling of effluent ▪ Biological Exposure to infectious substances 	<ul style="list-style-type: none"> ▪ PPE to be used at all times whilst conducting this task: long sleeve chemical gloves and safety glasses/goggles to be worn ▪ Conduct inspection daily ▪ Turn off pump prior to entering irrigation area ▪ Move sprinkler daily ▪ Warning signs in position on WWR MARK IV and irrigation area include exposure to biological agents. 	<ul style="list-style-type: none"> ▪ Housekeeper
7. Replace the filter sock bag from the filtration pod. Open the filter service cap. Remove the 50 Micron filter bag empty contents into the disinfection chamber place used sock in suitable bin and replace with a new one. Secure the service cap. Daily sock changes = checks during 30 day Commissioning period Replace filter bag (sock) daily during first 4 weeks of commissioning period. (Initial start up)	<ul style="list-style-type: none"> ▪ Uncontrolled and/or unplanned release of untreated effluent ▪ Cross contamination from WWR MARK IV to other areas of camp ▪ Biological Exposure to infectious substances ▪ Damage to sock containment 	<ul style="list-style-type: none"> ▪ PPE to be used at all times whilst conducting this task: long sleeve chemical gloves and safety glasses/goggles to be worn ▪ Isolate the power to the discharge pump and close the flow valve prior to opening filter service cap ▪ Unscrew lid on disinfection chamber prior to removing sock ▪ Ensure new sock is positioned below inlet height ▪ Warning signs in position on WWR MARK IV and irrigation area include exposure to biological agents. 	<ul style="list-style-type: none"> ▪ Housekeeper
8. Conduct a weekly check of UV filter to ensure it is operational. There are two led's located on the control panel of the UV filter. One led is an alarm, check this is not lit. An audible alarm will also sound if the UV light is not functioning properly.	<ul style="list-style-type: none"> ▪ Unauthorised repairs - Electrical shock ▪ UV light damage to unprotected eyes 	<ul style="list-style-type: none"> ▪ If the UV light alarm sounds and flashes, turn machine off and contact Houston for handling procedure ▪ Do not remove the bulb or look at UV the bulb ▪ No unauthorised repairs of UV light ▪ Never operate UV system when light is outside UV chamber 	<ul style="list-style-type: none"> ▪ Camp Manager ▪ Houston

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9. Wash, dry and sanitise all PPE, place in suitable storage	<ul style="list-style-type: none"> ▪ Cross contamination from WWR MARK IV to other areas of camp 	<ul style="list-style-type: none"> ▪ PPE to be maintained and checked on a regular basis 	<ul style="list-style-type: none"> ▪ Housekeeper ▪ Camp Manager
CONCLUDING			
1. Job Review	<ul style="list-style-type: none"> ▪ Checks are to be completed daily towards the end of the shift around the same time everyday ▪ Houston WWR MARK IV check form to be completed on a daily basis ▪ PPE to be available and maintained in a suitable sanitised condition ▪ All spills are to be reported using the incident management system ▪ All repairs to be completed by Houston or qualified approved alternative ▪ Report all alarms and non-conformances to camp manager 		

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Attachment 2 – AES – Product Specifications and Schematic diagram

WWR MARK IV - CONCEPT AND DESCRIPTION

The WWR-Mark IV (waste water recycle unit) has been designed with remote access in mind. The units are a “plug and play” system for mobile accommodation and remote work sites such as the drilling and service sectors in outback Australia. The WWR-Mark IV is engineered up to “CLASS A” treated water. Although modelled (Biowin Modelling) to recycle up to 10,000 litre at class B per day over a 24 hour period, the units are Identification plated for 20 person accommodation and 50 person work site to manage peak loads.

The Unit is processed by aeration, Chlorination, Micron filters and UV lighting. All unprocessed effluent enters the unit through a 50mm hose into a manifold where a number of buildings can be connected. Waste water from the kitchen and laundry has a different inlet to separate oil and grease through the Grease Trap before entering into the sewage inlet balance chamber where all shower and toilet waste initiates process. The unit has the capability to handle peak load when all personnel are showering at the one time as well as laundry loads.

Through a metered line, the effluent then enters the separation chamber where the sediment is separated and clear water spills into the primary aeration chamber through the clear water pick up line. It is in this chamber where the air pump aerates the effluent to break down the particle through a silicone diffuser. This process is continued through a secondary aeration chamber that has a dissolved oxygen metre probe submerged to monitor the oxygen percentage. This follows into the tertiary aeration chamber.

When the clear water flows into the disinfection, the water is treated with an amount of chlorine based on the flow rate of the unit. The flow rate allows enough time for the chlorine to react with the effluent and then the Pump turns on to push the fluid out through the Filter Housing in through the UV.

The UV light dilutes the chlorine amounts then the waste water flows through hoses to the sprinklers and out into a designated irrigation area, size depends on soil type classifications.



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Viking Grease Trap takes away all the fat from the kitchen before entering the main process



Chlorinator automatically doses chlorine through flow rate to the required amount



PLC—Programmable Logic Controller fully automates the unit for easy operation. Audible alarms are in place to manage malfunctions with troubleshooting backup



Sanisplit macerator for pumping out excess waste water from hoses before moving



Individual Air Pumps operate in each tank, providing regulated air through the Dissolved Oxygen Metre. The Oxygen metre is heat compensated

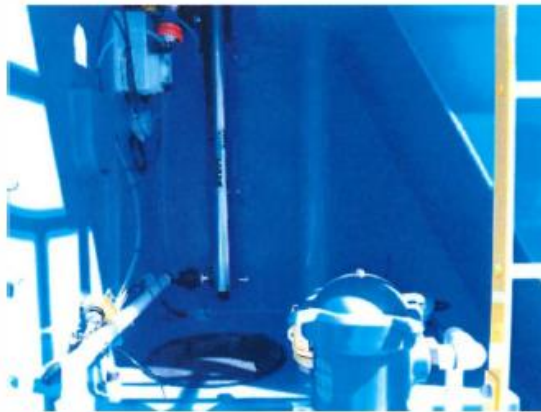
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Filter Housing Assembly carries a 50 micron filter bag that is easily changed out when necessary



One of these NOV Mono pumps pressurize final waste through the filter and onto the UV filter before irrigating onto the ground while the other returns sludge back into the system to allow another process step

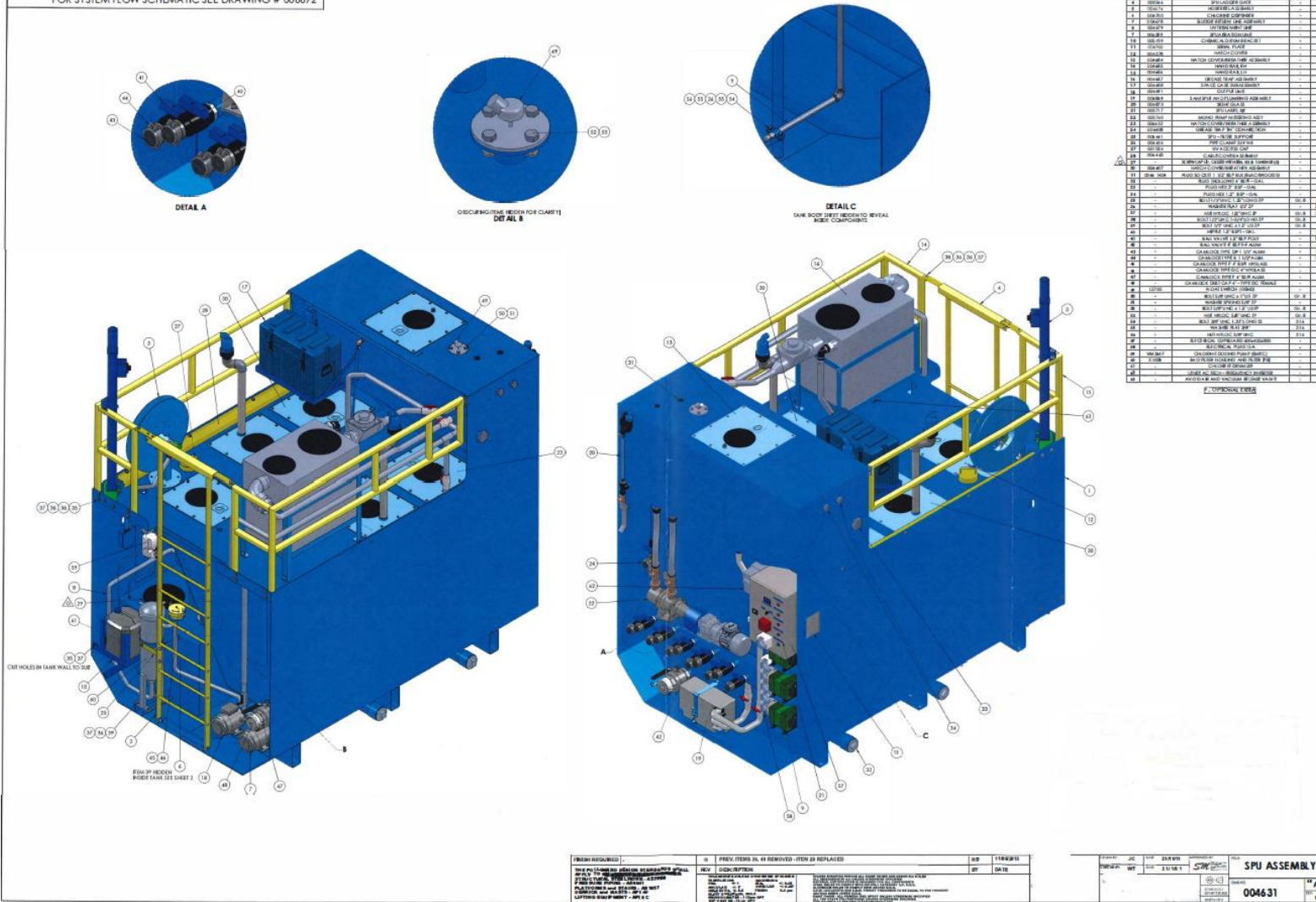


UV light distinguishes chlorine from final output

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NOTES: FOR HYDRAULIC SCHEMATIC SEE DRAWING # 00491 10
FOR ELECTRICAL SCHEMATIC SEE DRAWING # 00491 11
FOR SYSTEM FLOW SCHEMATIC SEE DRAWING # 00669 2



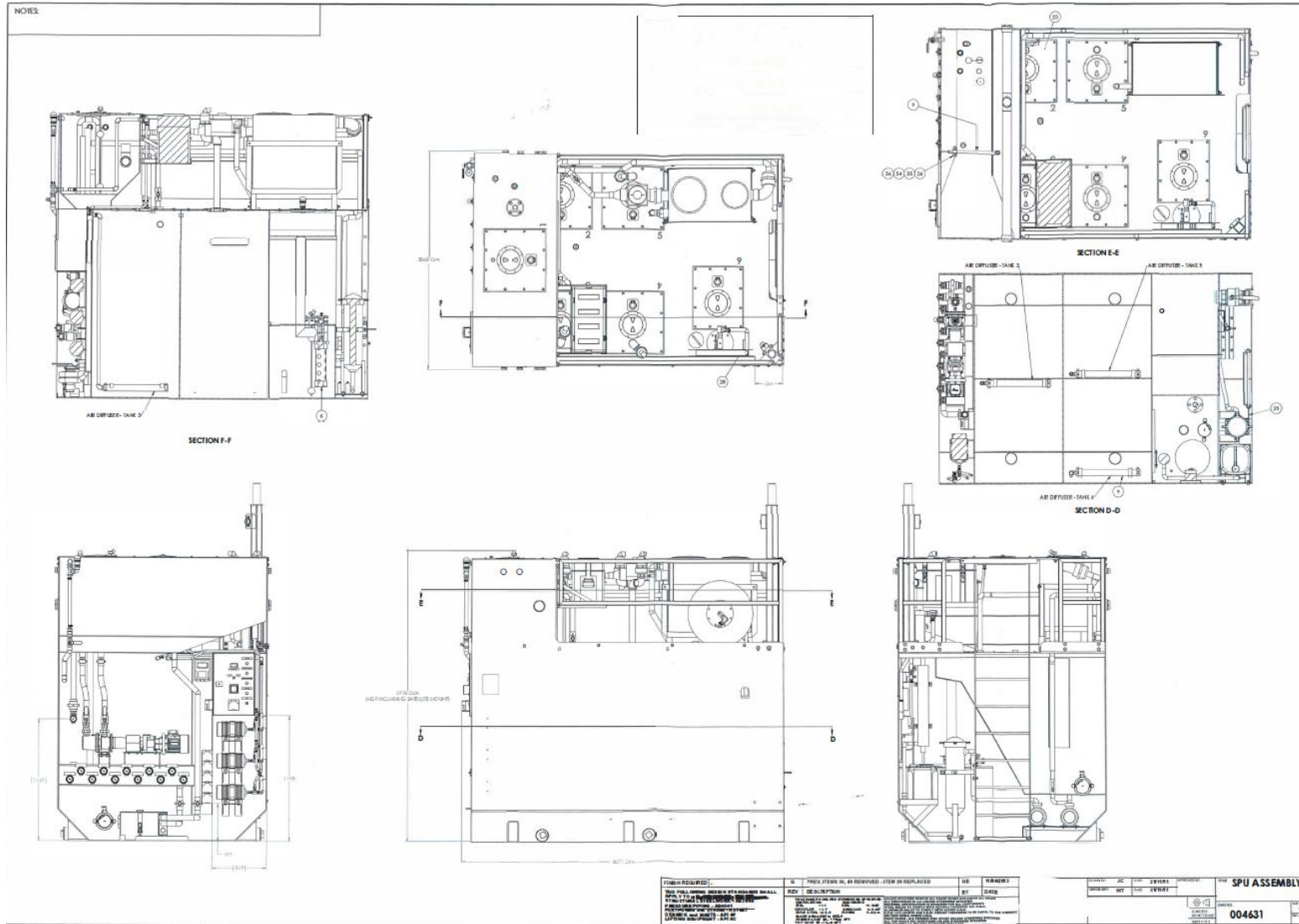
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Delegated Authority
Department of Energy & Public Works





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