

DETERMINATION

System: Stormwater System

Date: Mar 16, 2021

Subject: ARFF Station Consolidation

Revised Stormwater Drainage Design



Energy, Transportation, &
Asset Management
Systems Performance Group/
Watershed Management

Based on ARFF Station Consolidation Interim Schematic storm drainage drawings and the Design Criteria Package, Volume 1 – Drainage Design Report (Report) both dated July 16, 2020 and revised on March 12, 2021 and issued by Gensler/ CP&Y, the drainage design for the subject development, the location of which is depicted in red clouded areas in Figure 1, is expected to comply with DFW's Design Criteria Section 334- Storm Drainage Utilities and the iSWM Criteria Manual for the following design storm event criteria:

- Water Quality
- Streambank Protection
- Conveyance
- Flood Mitigation

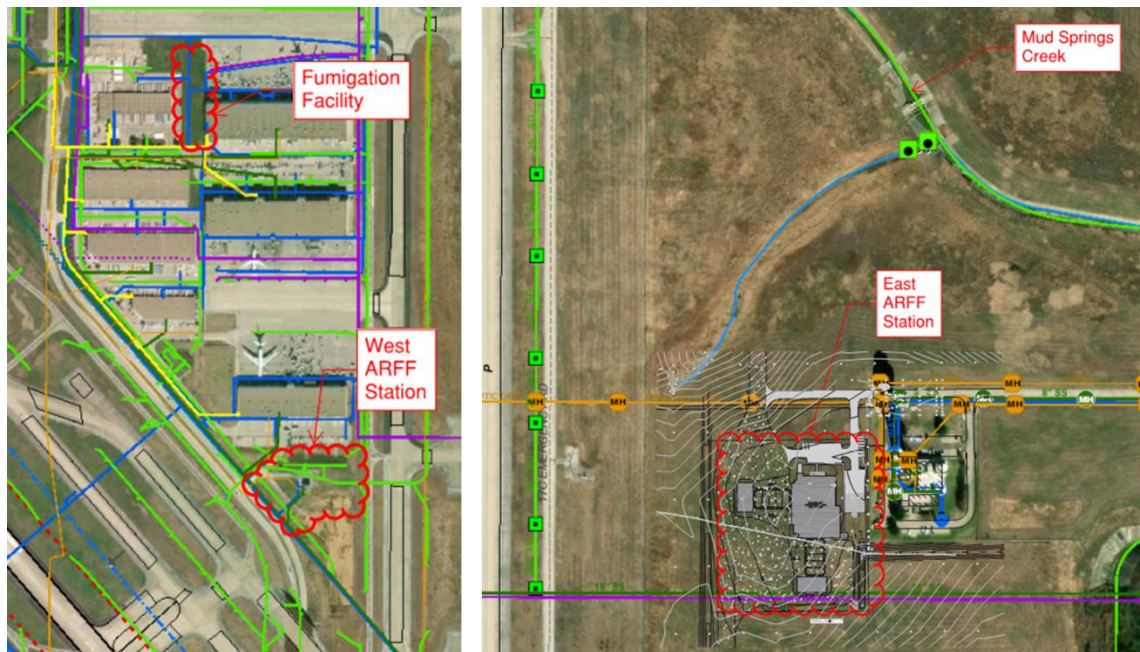


Figure 1 Project Locations

The project includes the following three (3) separate sites: West ARFF Station, East ARFF Station and a Fumigation Facility. The proposed West ARFF Station 7-acre development area is located of west of Taxiway C and south of the DFW International Air Cargo III facility. The proposed Fumigation Facility 2-acre development area is located on West 23rd St. The proposed East ARFF Station 5-acre development area is located east of Taxiway P adjacent to the FAA East Control Tower (refer to Figure 1 and Exhibit I, II and III - Proposed Drainage Maps for the three (3) development).

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Water Quality

The area proposed for the new West ARFF Station has an existing dry detention pond that accepts drainage from the DFW International Air Cargo III ramp area (refer to Figure 2). This pond will be filled, and a new pond will be constructed (see Exhibit 1 – Proposed Drainage Map of West ARFF Station) to accept drainage from the DFW International Air Cargo ramp and the new West ARFF Station development. In addition, first flush drainage from Line I3 of the First Flush System (purple line in Figure 2), which collects the first flush from approximately 126 acres of impervious area from the UPS, American Airline Hangar and International Air Cargo ramps, will be diverted into this new detention pond. The final design must comply with the first flush requirement of capturing 0.25 inches of runoff from impervious areas by incorporating a pilot channel in the proposed pond with layered media that can filtrate the runoff (excluding roofs). Per Section 3 – Preliminary Data and Design Requirements of the referenced Report, the concept is to incorporate stormwater detention with filtration media.



Figure 2 Proposed West ARFF Station Location

The East ARFF Station will need to be split into three (3) sub drainage areas with the north drainage area draining into Mud Springs Creek via the existing MS-D1 channel to the north of the development and south drainage areas 1) draining to the existing MS-C concrete-lined channel to the east of



Figure 3 Proposed East ARFF Station Location

the development as seen in Figure 3 and 2) sheet flowing to the southwest to a grassy open area (refer to Exhibit III). The parking area will drain into a 700-foot long vegetative swale that will drain into the MS-C concrete-lined channel. This vegetated swale will provide sufficient water treatment for the operational use of the impervious area of this development.

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The existing Fumigation Facility will be demolished for construction of the new West ARFF Station. The new Fumigation Facility will be built on West 23rd St. in an area with split sub drainage areas (refer to Figure 4 and Exhibit III). The north sub drainage area will drain via sheet flow into a grassy area that currently drains into a 30-inch storm drain pipe that conveys stormwater into the West Airfield Dr. storm drain system. The south sub drainage area will drain into a new detention pond. The final design must



Figure 4 New Fumigation Facility Location

comply with the first flush requirement of capturing 0.25 inches of runoff from impervious areas by incorporating a pilot channel in the proposed pond with layered media that can filtrate the runoff (excluding roofs). Per Section 3 – Preliminary Data and Design Requirements of the referenced Report, the concept is to incorporate stormwater detention with filtration media.

Streambank Protection

Based on the Report, Section 3 – Preliminary Data and Design Requirements, the proposed facilities must comply with the streambank protection requirements by controlling the runoff. Specifically, the Report states that preliminary plans will include several methods to mitigate velocities in stormwater runoff per iSWM Criteria Manual Section 3.4. The DFW Design Criteria Manual Section 334 requires channel velocities to be below 4 fps.

Conveyance

The proposed storm design must comply with the DFW Design Criteria Manual Section 334. The Report states iSWM Criteria Manual Section 3.6 will also be complied with. Access manholes need to be provided per the Design Criteria Manual. The storm drain system needs to maintain acceptable velocities within the system and at discharge points at existing and proposed channels.

Flood Mitigation

The three proposed facilities are not located in proximity to any 100-year inundation or FEMA Zone AE Floodplain. The West ARFF Station and new Fumigation Facility will drain into Big Bear Creek and the East ARFF Station will drain into Mud Springs Creek.

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The proposed designs must comply with the criteria of maintaining proposed 100-year runoff to existing conditions levels at Comparison or Discharge Points to be defined. The compliance requirements delineated in the Report Section 3 provides for assurance that flood mitigation measures will be put in-place.

The new Fumigation Facility detention pond, which will drain into an existing 18-Inch RCP that conveys stormwater into the West 23rd St. storm drain system, must drain within 24 hours after the peak of the 100-Year design storm event. Also, the proposed detention pond from the West ARFF Station must drain within 24 hours after the peak of the 100-Year design storm event, complying with the DFW Design Criteria Manual and Advisory Circular no. 150/5200-33C that requires water facilities to drain within 48 hours to avoid wildlife attraction.

Concerns or Recommendations

This Determination is being issued as Conditional since it is solely based on schematic drawings and Design Criteria (Report) to be used for soliciting a Design-Build Contractor via a Request for Qualification Package. As stated in the Report, a full Hydrologic and Hydraulic (H&H) Study will need to be completed in order to finalize the drainage design, which will provide the required drainage calculation and hydrographs required by the DFW Design Criteria Section 334. Once final drainage design has been completed, sealed and signed by a Professional Engineer licensed in the State of Texas, this Determination will be re-issued as Final.

Conclusion

It is anticipated that the post development drainage conditions will have no impact within the Big Bear Creek and Mud Springs Creek floodplain. The stormwater drainage from the proposed West ARFF Station, the proposed East ARFF Station and proposed new Fumigation Facility should not result in any of the following:

- Impact existing infrastructure
- Have a high probability of loss of human life
- Affect safe airport operations
- Interrupt aircraft services

Therefore, based on the Interim Schematic storm drainage drawings and the Design Criteria Package, Volume 1 – Drainage Design Report, the proposed drainage design is determined to be conditionally acceptable and it is expected that the final design and eventual constructed drainage system will comply with the analysis set forth in this Determination. However, this Conditional Determination will be Final only after the H&H Study and final drainage design is submitted and approved by the DFW Floodplain Manager.

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Mar / 16 / 2021

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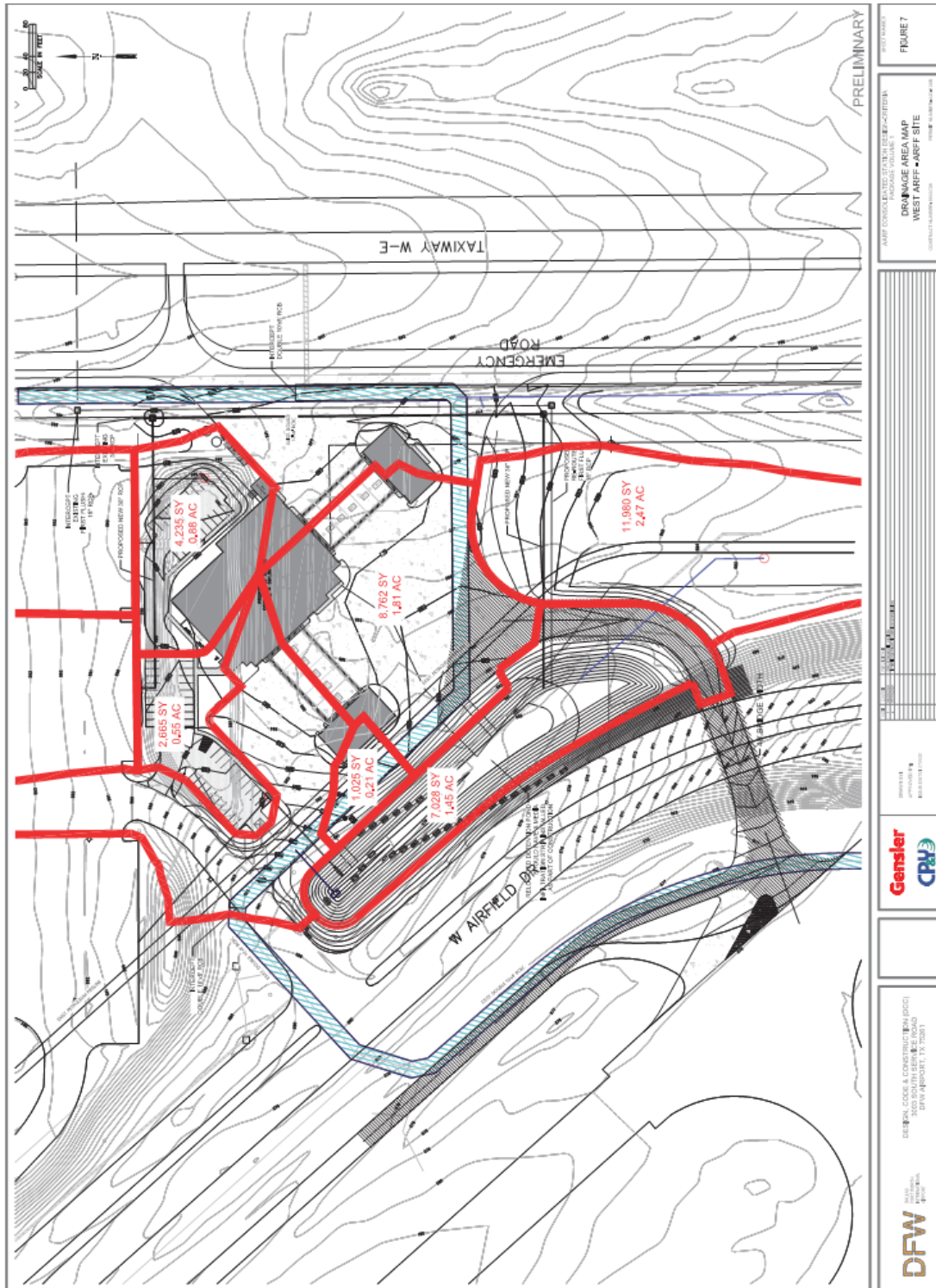
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EXHIBIT I – Proposed Drainage Map “West ARFF Station”



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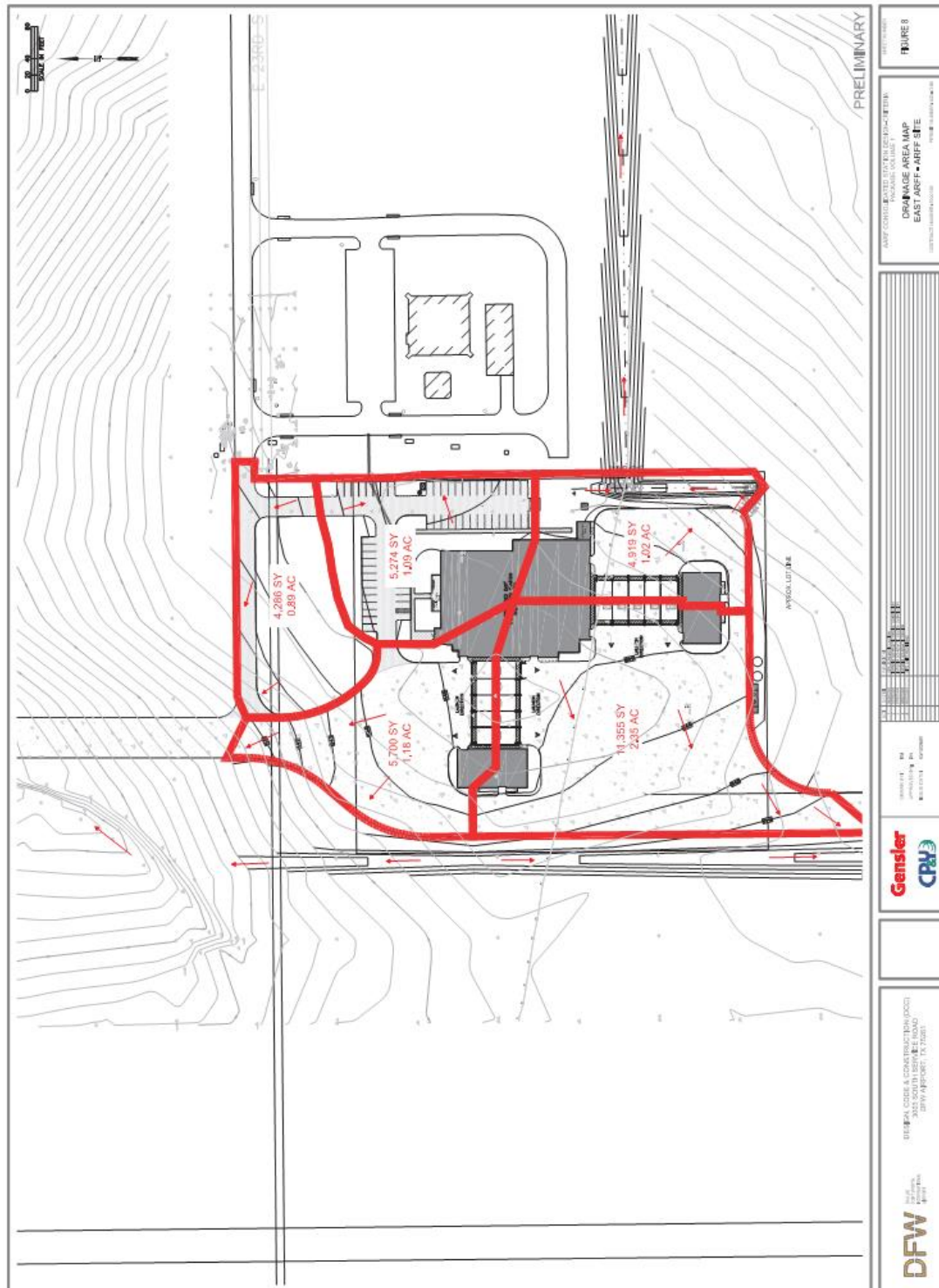
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EXHIBIT II – Proposed Drainage Map “East ARFF Station”



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EXHIBIT III – Proposed Drainage Map “Fumigation Facility”

