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Technical Memorandum

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Purpose

Recent federal regulatory changes relevant to §404 of the Clean Water Act have the potential to significantly affect stream ecosystems and mitigation markets in the state of Texas. Specifically, the issuance of the Navigable Waters Protection Rule (which categorically excludes ephemeral streams from jurisdiction) and the recently proposed reissuance of Nationwide Permits both have environmental and mitigation demand implications within the Fort Worth (SWF) and Galveston (SWG) districts of the U.S. Army Corps of Engineers (USACE). The USACE §404 permit record and mitigation banking ledgers available on RIBITS were analyzed to quantify these potential effects; the results of which are presented below.

Methods

We selected all stream impacts from a dataset of all DA permits for the SWF and SWG districts of the USACE. These data were obtained via FOIA request from the USACE ORM database and cover the years 2015 to 2019. Microsoft Excel was used to filter for stream impacts greater than 300 linear feet and less than or equal to 300 linear feet through the utilization of pivot tables. We removed all permits that were not Nationwide Permits. For permits that impacted greater than 300 linear feet of any stream type, they were distinguished from permits that impacted less than 300 linear feet through the addition of a categorical variable to the dataset (YES – greater than 300 linear feet, NO – less than or equal to 300 linear feet). We then separated those impacts into various Cowardin classes through the addition of another categorical variable (ephemeral, intermittent, perennial, or tidal). We visualized the different Cowardin classes, number of linear feet, and the categorical variable over/under 300 linear feet using the R statistical software platform ([v3.6.2], dplyr/ggplot packages).

Additionally, we selected all credit withdrawals from RIBITS for nine SWF mitigation banks (banks with Stream Mitigation Method certified credits) from 2014-2019[1]. We filtered the data for ephemeral, intermittent and perennial in-channel credits (ICC) and riverine buffer credits (RBC). We collectively refer to ICC and RBC credits as "ICC/RBC". We visualized the number of ICC/RBC credits withdrawn using the R statistical software platform ([v3.6.2], dplyr/ggplot packages).

Results

Fort Worth District (SWF)

When we focus only on Nationwide Permit impacts of more than 300 linear feet, we see 47.1 percent (n=158; 293,155 linear feet [~56 mi]), 36.0 percent (n=125; 224,077 linear feet [~42 mi]), and 17.0 percent (n=73; 105,439 linear feet [~20 mi) of impacts on ephemeral, intermittent streams, and perennial streams, respectively (Figure 1; Table 1). For Nationwide Permits impacting less than or equal to 300 linear feet, we see 48.7 percent on ephemeral (30,295 linear feet [~6 mi]), 34.8 percent on intermittent (21,638 linear feet [~4 mi]), and 16.5 percent on perennial (10,268 linear feet [~1 mi]; Figure 1; Table 1).

Galveston District (SWG)

For SWG, impacts associated with Nationwide Permits involved ephemeral streams more than any other stream classification. Focusing on permitted impacts of greater than 300 linear feet, we see approximately 50.0 percent (n = 32; 167,688 linear feet [~32 mi], 28.5 percent (n = 44; 95,615 linear feet [~18 mi]), 18.1 percent (n = 57; 60,755 linear feet [~12 mi]), and 3.4 percent (n = 22; 11,454 linear feet [~2 mi]) impacting ephemeral, intermittent, perennial, and tidal streams respectively (Figure 2; Table 1). For Nationwide Permit impacting less than or equal to 300 linear feet, we see 16.4 percent ephemeral (613 linear feet [~0.11 mi]), 47.5 percent intermittent (1774 linear feet [~0.34 mi]), 11.9 percent perennial (445 linear feet [~0.08 mi]), and 24 percent tidal (900 linear feet [~0.17 mi]; Figure 2; Table 1)).

Table 1: Permitted impacts (LF) 2014-2019

District	NWPs <300 LF			NWPs >300 LF			Totals
	eph	int	per	eph	int	per	
SWF	30,295	21,638	10,268	293,155	224,077	105,439	684,872
SWG	613	1,774	445	167,688	95,615	60,755	326,890
Totals	**30,908**	**23,412**	**10,713**	**460,843**	**319,692**	**166,194**	**1,011,762**

[1] The nine banks are Bill Moore Mitigation Bank, Cottonwood Creek Mitigation Bank, Fall-Off Creek Mitigation Bank, Graham Creek Mitigation Bank, Mill Branch Mitigation Bank, Red Oak Umbrella Mitigation Bank, Rockin' K on Chambers Creek Mitigation Bank, Straus Medina Mitigation Bank, and Wilbarger Creek Mitigation Bank.

Figure 1: Linear Feet Impacts in SWF. Permits from ORM 2015-2019. (n = *number of permits impacting >300)*

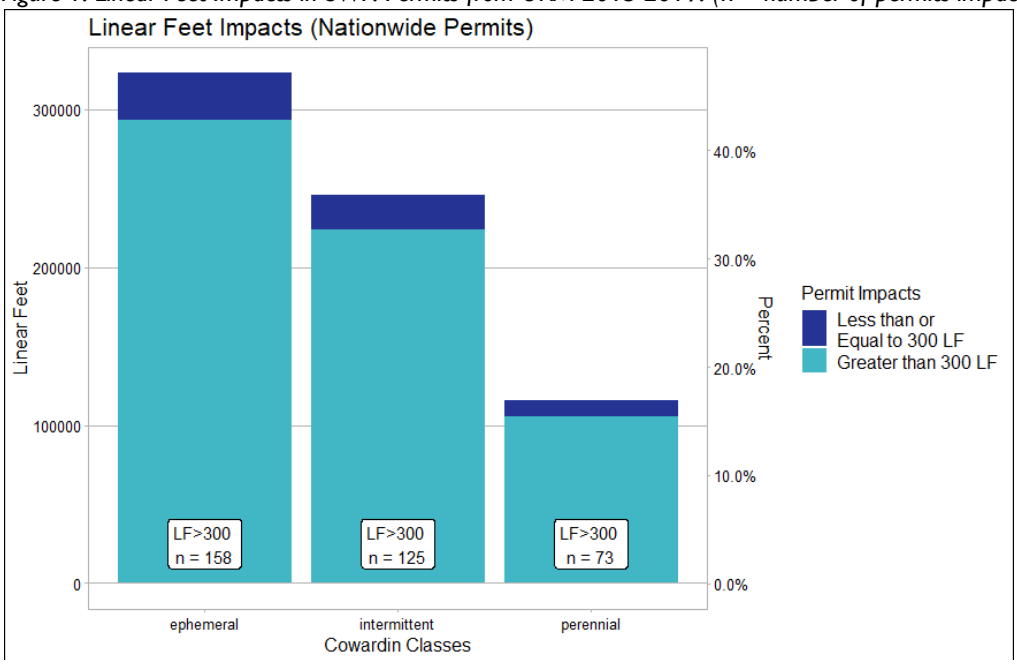
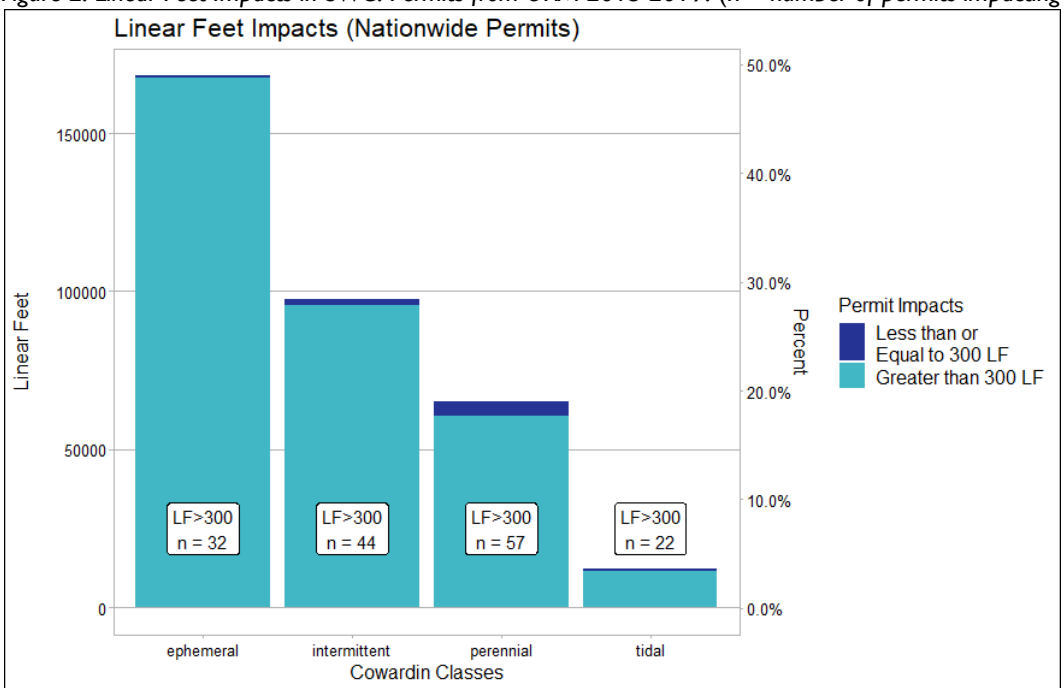


Figure 2: Linear Feet Impacts in SWG. Permits from ORM 2015-2019. (n = *number of permits impacting >300)*



Credit Withdrawals

In SWF, from 2014-2019, RIBITS recorded ICC/RBC credit withdraws totaling 30,979.02 credits for ephemeral impacts, 22,426.01 credits for intermittent impacts, and 52.04 credits for perennial impacts. Thus, ephemeral ICC/RBC credits represent approximately 58% of total ICC/RBC market volume in SWF since 2014.

Figure 3: ICC/RBC Credit Withdrawals in SWF