

DETERMINATION OF ANIONS IN LANANA CREEK BY ION CHROMATOGRAPHY

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ABSTRACT

Lanana Creek is one of two springs that surround Nacogdoches, TX. Lanana Creek starts southwest of Lake Naconiche, conjoining with several other bodies of water along its path, and becomes part of the Angelina River. This body of water eventually ends in the Gulf of Mexico which may contribute to the dead zone. Contaminants in water may be of small concentration; however, prolonged exposure could produce many negative effects. To monitor future change in the creek, whether natural or human-induced, a baseline of anions for the creek waters must be established as a “snapshot” of the Nacogdoches Lanana Creek area. Events that could change the baseline include, but are not limited to, floods, fertilizers and pesticides used in rural farms around the area, and urban runoff.

METHODS

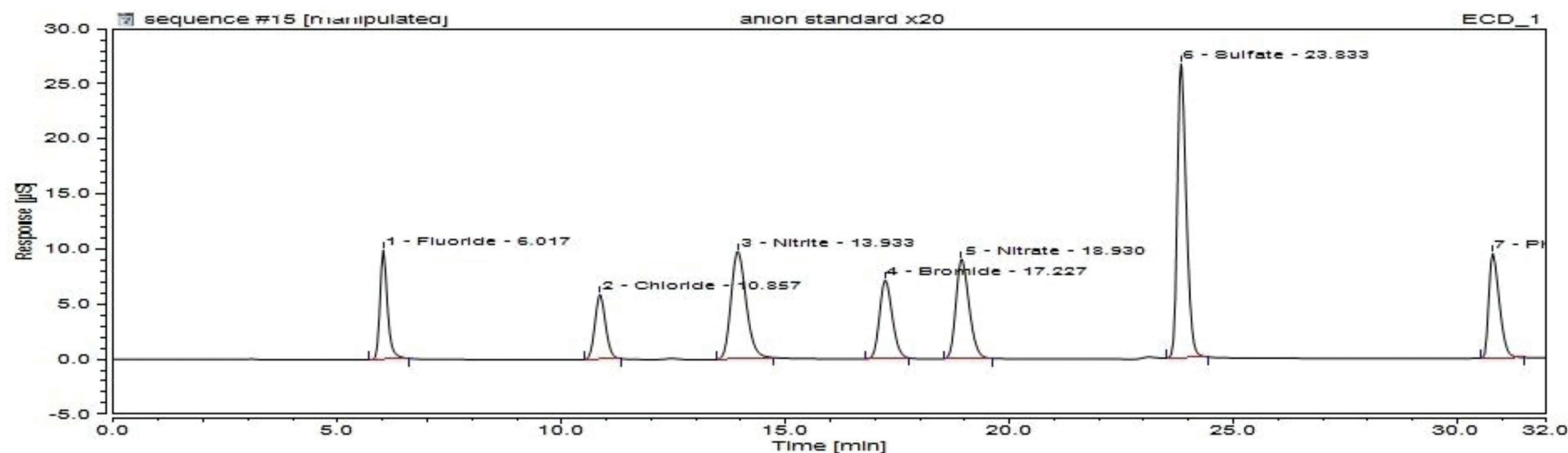
The experiment consists of obtaining samples from eight different locations approximately twice a month along Lanana Creek and testing for different anion concentrations in the creek. Samples from the eight sampling sites consist of NE Stallings Drive, SE Stallings Drive, Martin Luther King Blvd., Park Street, Martinsville Street, Starr Avenue, Austin Street, and Main Street. Samples are filtered to remove residue as only the dissolved species in the water will be analyzed. Anion analysis was conducted using an ion chromatography (IC) for the following species: fluoride, chloride, nitrite, bromide, nitrate, sulfate, and phosphate.

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	Average ppm for Location						
	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate	Phosphate
NE Stallings	0.62	18.93	0.63	0.21	15.19	35.94	2.64
Austin	0.48	21.45	n.a.	0.13	6.16	39.42	0.19
Main	0.25	21.81	0.14	0.10	6.58	34.31	0.34
Starr	0.25	22.44	0.22	n.a.	10.99	38.94	0.24
MTV	0.46	24.58	n.a.	0.16	5.59	46.60	0.21
SE Stallings	0.50	19.77	0.23	0.16	5.17	29.11	0.21
Park	0.44	21.56	n.a.	0.12	19.12	36.51	0.40
MLK	1.02	16.39	n.a.	0.20	10.60	34.61	0.24
Average ppm for Creek	0.50	20.86	0.30	0.15	9.92	36.93	0.56
Std Dev ppm for Creek	0.24	2.48	0.22	0.04	5.08	5.05	0.84



CURRENT STATUS AND FUTURE WORK

Data has been collected since August 2013 to the present approximately twice a month. An interesting result involves a large increase in nitrate levels during October for the sites of NE Stallings Dr, Park St, and Starr Ave. There could be a possible contamination due to the use of fertilizers and pesticides near these locations; possible runoff may have occurred during rain storms around this time. Further collection and analysis of the creek water is needed before a complete baseline of anions for the creek can be established for controlling/monitoring changes in the creek over time.