PROJECT: IRRIGATION WATER RECIRCULATION AND REUSE AT STATEN ISLAND

The Fish Friendly Farming Certification Program through a grant from the State Water Resources Control Board, Regional Board and the Delta Conservancy has provided funding to construct this project.

Site Description

Staten Island is a preserve owned by The Nature Conservancy to support endangered sandhill cranes and a variety of waterfowl while growing crops that can benefit wildlife. There are a variety of crops grown on the island including: alfalfa, potatoes, triticale (wheat), corn, irrigated pasture and rice (Figure 1). There is long term plan to increase the acreage of rice and restore wetlands on the southern end of the island. The island encompasses 9200 acres of which 8320 are farmed.

The island has a set of main drainage ditches and smaller field ditches (Figure 2). Two large pumps lift water over 25 ft. vertical and discharge to the south fork of Mokelumne River. The water pumped from the island includes both groundwater which accumulates due to the subsided condition of the island and applied irrigation water. Irrigation water is brought into the island through a series of syphons that ring the island (Figure 2).

The use of syphons makes it difficult to directly measure the amount of irrigation water applied, but the site manager estimates they use 3.6-4.0 AF/acre/year. With the exception of potatoes and irrigated pasture that are sprinkler irrigated, all the other crops are flood irrigated. Rice requires standing water on the field for much of the season and is believed to reduce the subsidence process by reducing the oxidation of organic matter in the soil.

The pesticide use reports for 2021 were evaluated for the fields where rice is grown. All of the chemicals used are moderate to low toxicity and only one, Pendimethalin, has a very high likelihood of moving offsite in return flows. Recirculating irrigation water will allow return water to be reused and exposed to sunlight for a longer time breaking down pesticide and herbicide residues prior to discharge offsite.

Figure 1. Rice on Staten Island

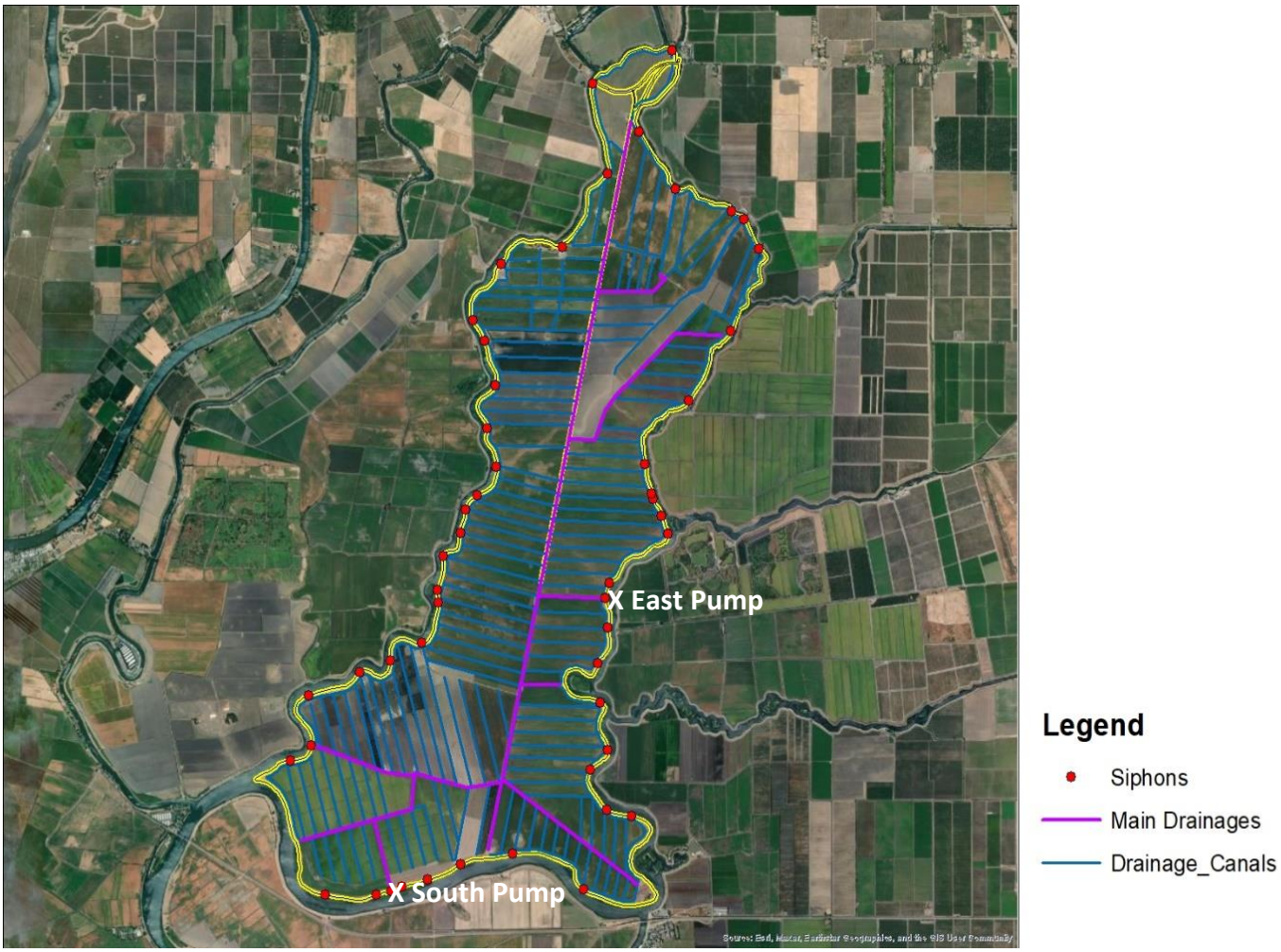

Figure 2. Main and field drainage ditches and canals, main drainage pumps and syphons on Staten Island

Figure 3. South Pump at Staten Island

Proposed Project

The site manager would like to conserve water and return less to the rivers that border the site by installing a recirculation pump and pipelines. This would allow for water to be re applied and therefore reduce the amount of water diverted for irrigation. The recirculation pump would move water up through pipes to higher spots, and then release water into the field ditch system and irrigate the fields. One pump should be able to move 4,000 gal/min to be comparable to flow from the siphons. The pumps would recirculate continuously from June through August as needed.

Installation of one of these pumps will conserve 2100 AF/year. This project will also reduce the movement of pesticides in return flows as it will reduces the volume of these flows. Electricity is also expected to be reduced as the large pumps (South and East Pumps) will now be moving less water. The first phase of the project will recirculate water for 652 acres of rice fields (green on Figure 4) with a future second phase for 462 acres (blue on Figure 4).

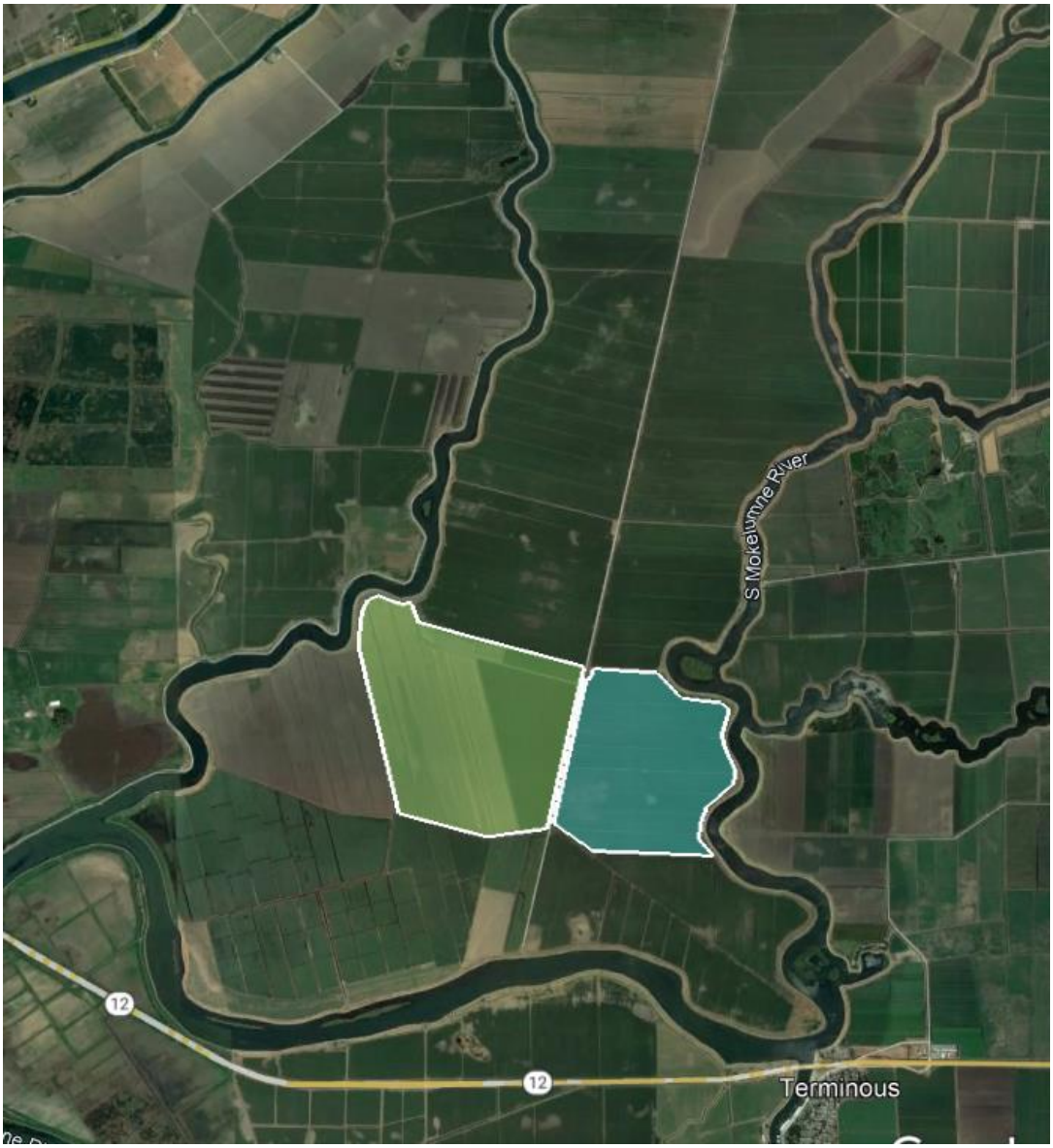

Figure 4. Eventually the recirculation pump will be able to move water in these two rice areas

Please contact Laurel Marcus, laurelm@fishfriendlyfarming.org for more information on this project and on the Fish Friendly Farming Certification Program.