

Utilization of Telemetry Monitoring System on The Dynamics of Water Quantity and Quality in The Dadahup Swamp Irrigation Area

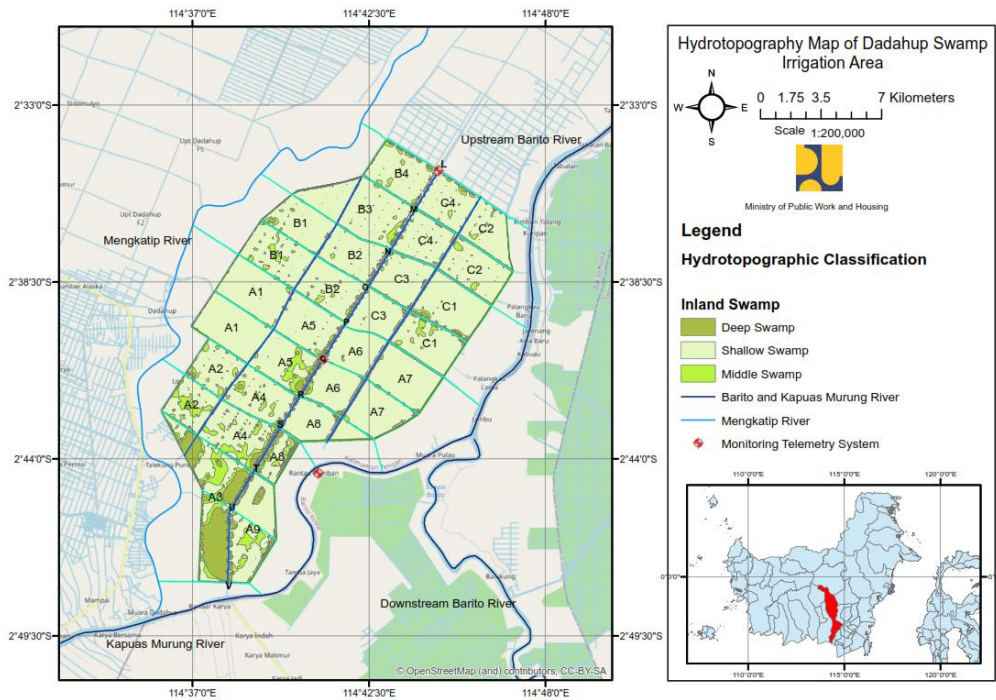
Asril Zevri¹ and Hadiranti²

Utilization of Telemetry Monitoring System on The Dynamics of Water Quantity and Quality in The Dadahup Swamp Irrigation Area

Author 1: Asril Zevri

Author 2: Hadiranti

Corresponding Author: asrilzevri19@gmail.com



Introduction

Dadahup Swamp Irrigation is one of the locations to increase the **food supply** in Indonesia

Due to extreme seasonal changes, the Dadahup Swamp Irrigation Area is often **flooded**, resulting in **crop failure**

The condition of the channel network system and irrigation buildings that are not **functioning optimally** along with the **broken and collapsed embankments** around the irrigation area has resulted in the conversion of the area into **shrub land**

Initiation

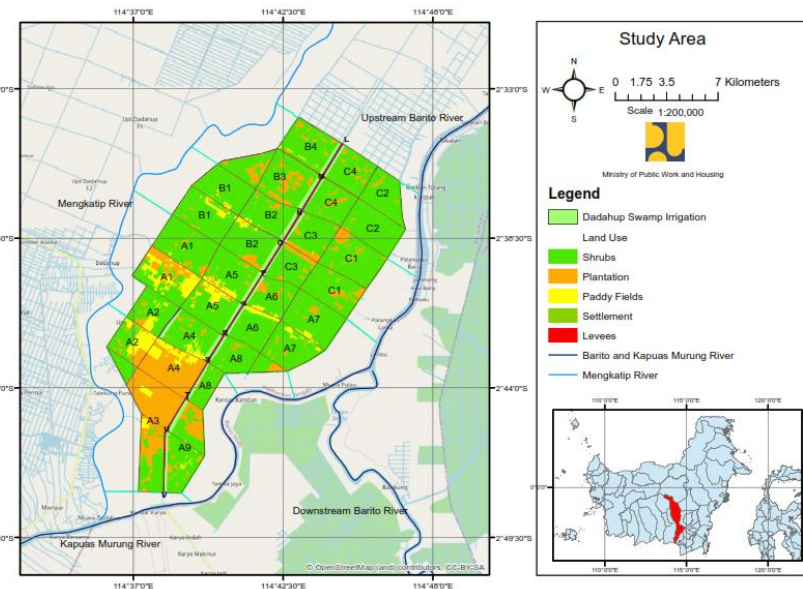
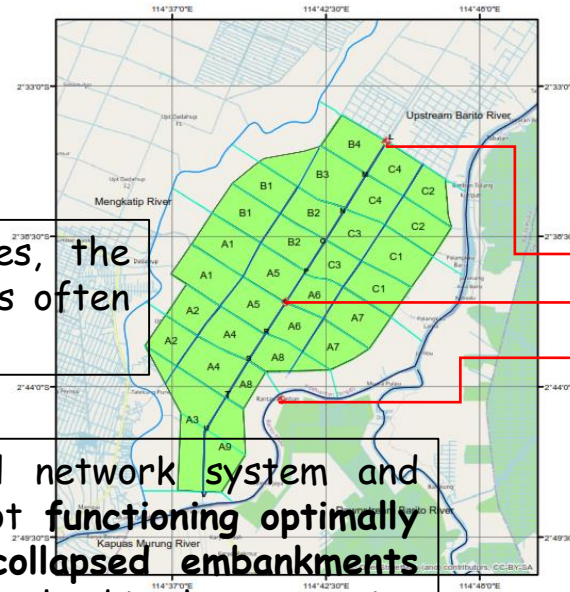
Installing **Monitoring Telemetry System**

Measures dynamics **water quantity and quality**

Objectives

Water Quantity and Water Quality Behaviour

Upstream and Middle stream Main Primary Channel



Arif, I, M. Legono, D, Luknanto, D 2021 Study on the performance of the hydraulics system planning of swampy irrigation area of Dadahup, Kapuas District, Central Kalimantan Province. *IOP Conf. Ser. Earth Environ. Sci.* 930 012049 doi:10.1088/1755-1315/930/1/012049.

Purboseno, S. Suparyanto, T, Hidayat, A, A, Pardamean, B 2021 A hydrodynamic analysis of water system in Dadahup swamp irrigation area. *Proc-Int. Conf. on Comp. Sci. and Artif. Intelli (Jakarta)* pp 400-406.

Wignyosukarto, B 2000 Review konsep pengembangan pola tata air Lamunti, Dadahup, dan Palingkau, proyek pengembangan lahan gambut Kalimantan Tengah. *For. Tek. Jil. 24* 342-357.

A. Zevri, A. P. Rahardjo, and D. Legono, "Swamp Water Parameter Dynamics Induced by Rainfall and Tides in Dadahup Irrigation Area , Kalimantan," in *IC-STCC-2022 IOP*, 2022, pp. 1-10, doi: 10.1088/1755-1315/1105/1/012013.

D. A. Suriadikarta, "Teknologi Pengelolaan Lahan Rawa Berkelanjutan: Studi Kasus Kawasan Ex PLG KalimantanTengah," *J. Sumberd. Lahan*, vol. 6, no. 1, hal. 45-54, 2012, doi: <https://ejurnal.litbang.pertanian.go.id/index.php/jsl/article/view/6301>.

B. Blunden dan B. Indraratna, "Pyrite Oxidation Model for Assessing Ground-Water Management Strategies in Acid Sulfate Soils," *J. Geotech. Geoenvironmental Eng.*, vol. 127, no. 2, hal. 146-157, 2001, doi: 10.1061/(asce)10900241(2001)127:2(146).

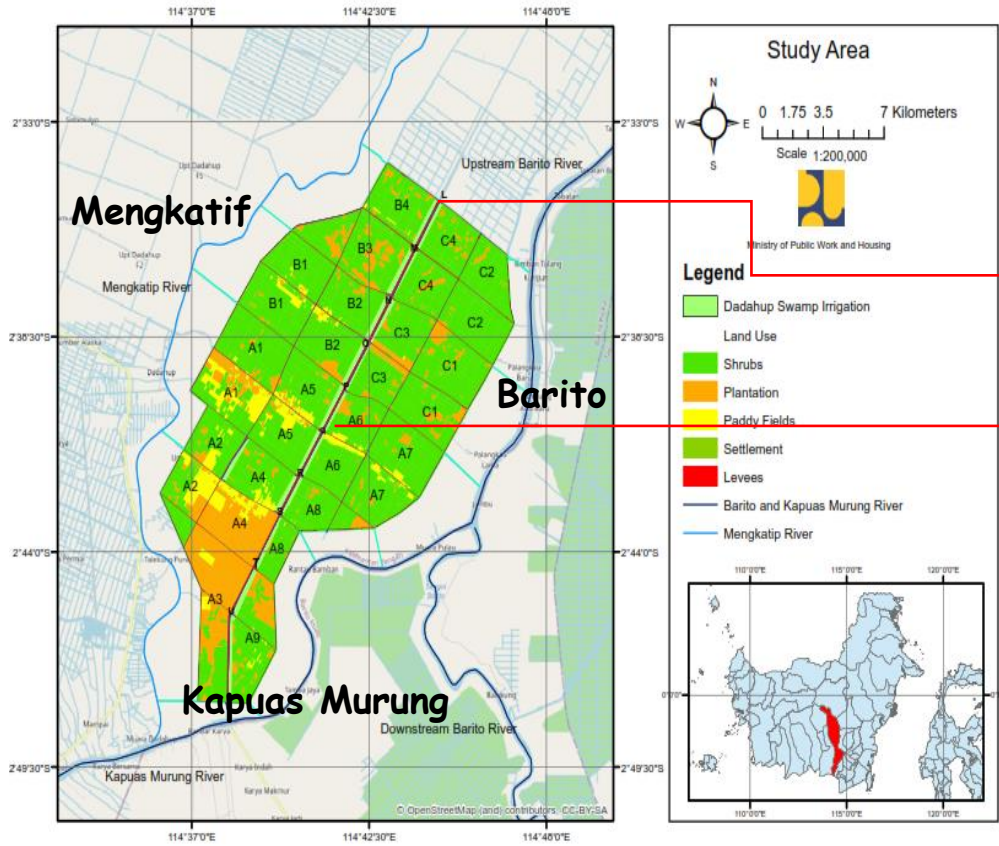


Water Quantity

Water Quality

Study Area

Methods



Water Quantity
Rainfall
Water Level



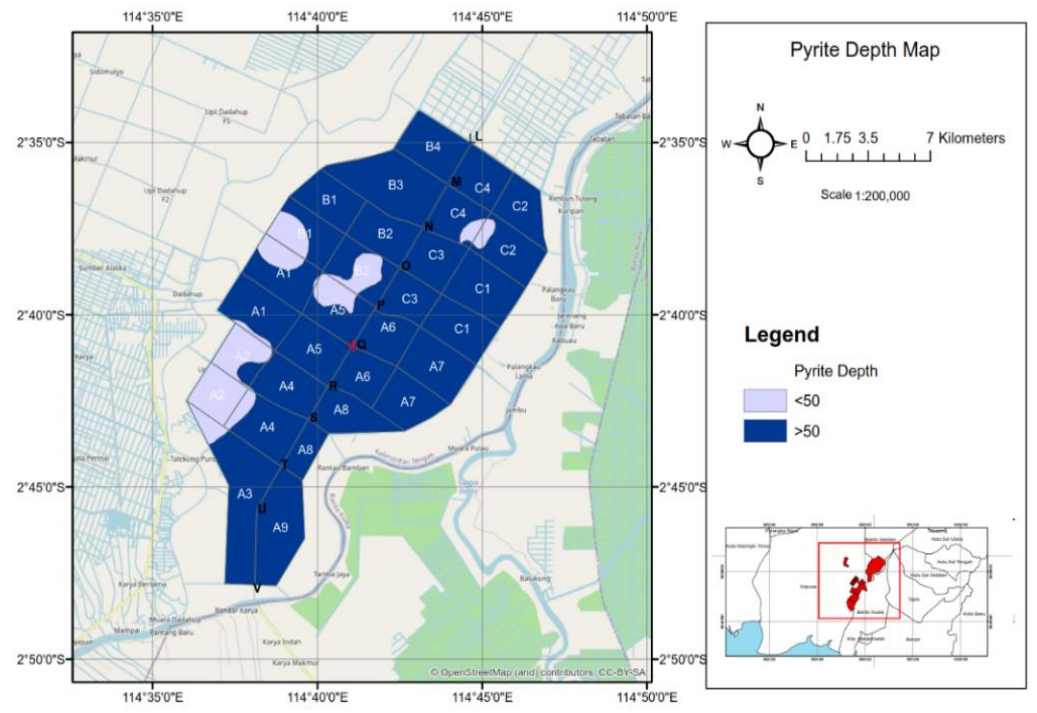
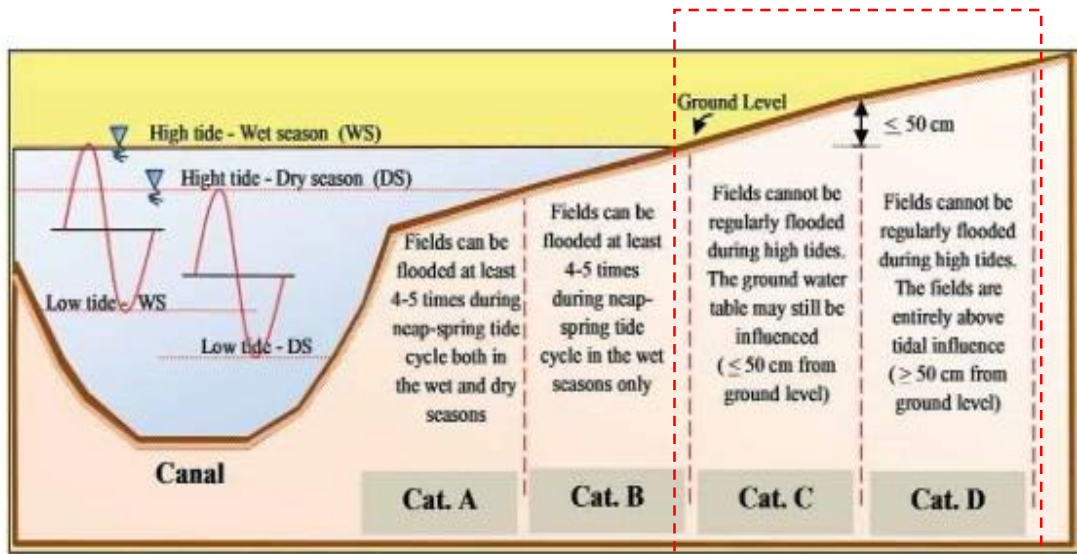
Water Quality
Ph

Measured Data
Dry and Rain

Swamp Characteristic

Swamp is area that is inundated naturally, continuously or seasonally on a relatively flat land with mineral deposits or peat and overgrown with vegetation.

Hydrotopography Conditions: Tidal Swamps



Soil Characteristic is **Sea-Fluvial**

Depth of Pyrite > 50 cm

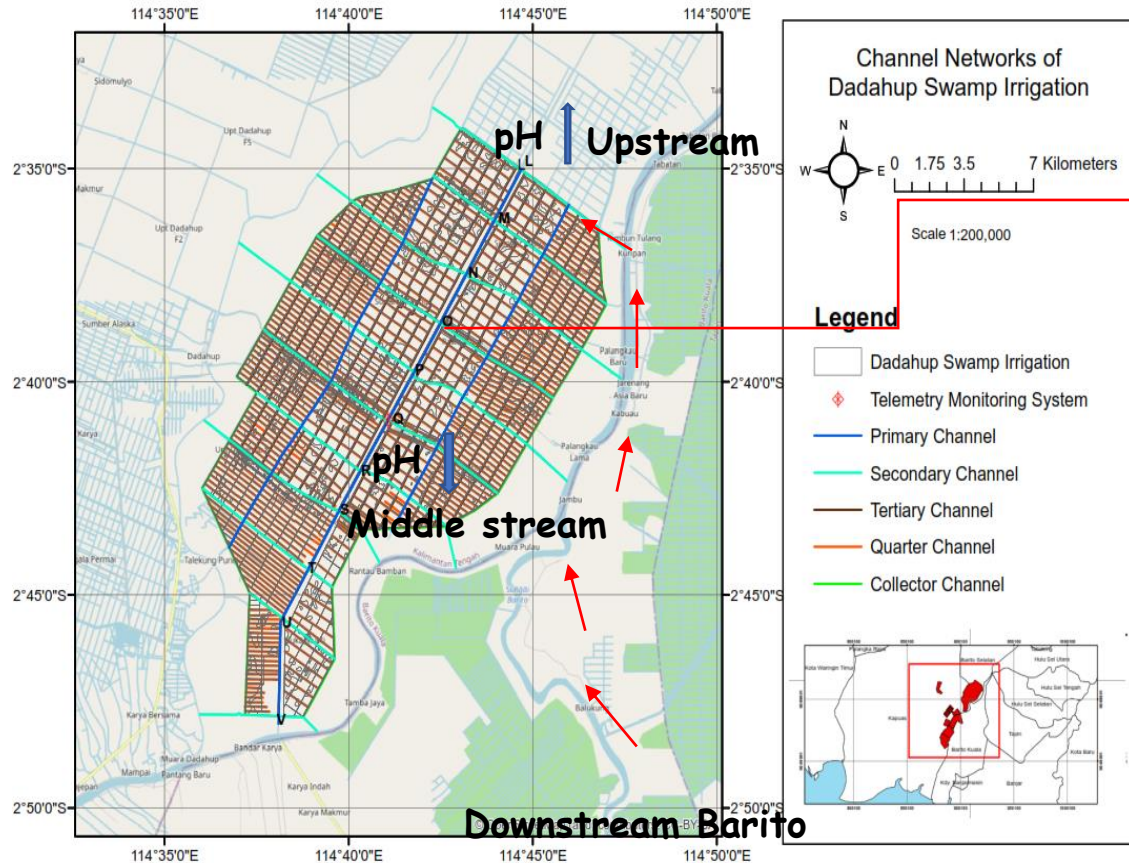
Presence of **Pyrite** in the **subsoil**

Potentially **Sulfuric Acid Soil**

Sulfuric acid

Water Quality and Quantity Dynamic

Main Primary Channel

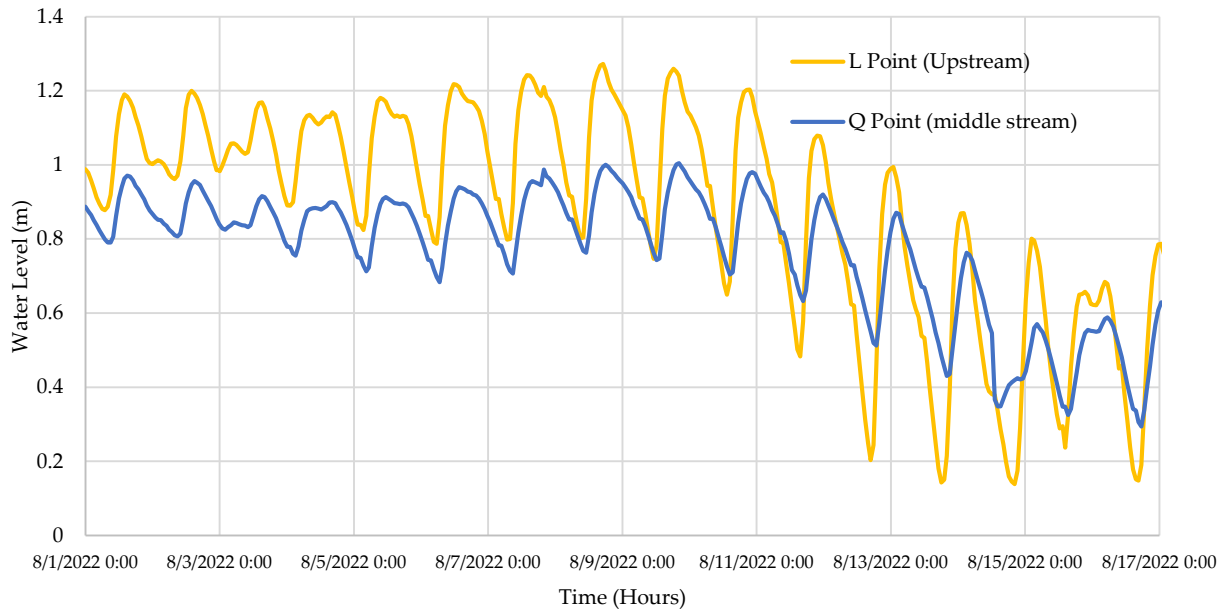


Reduction of organic matter
↓
The Acidity of soil and water
↓
Decreases Ph Level

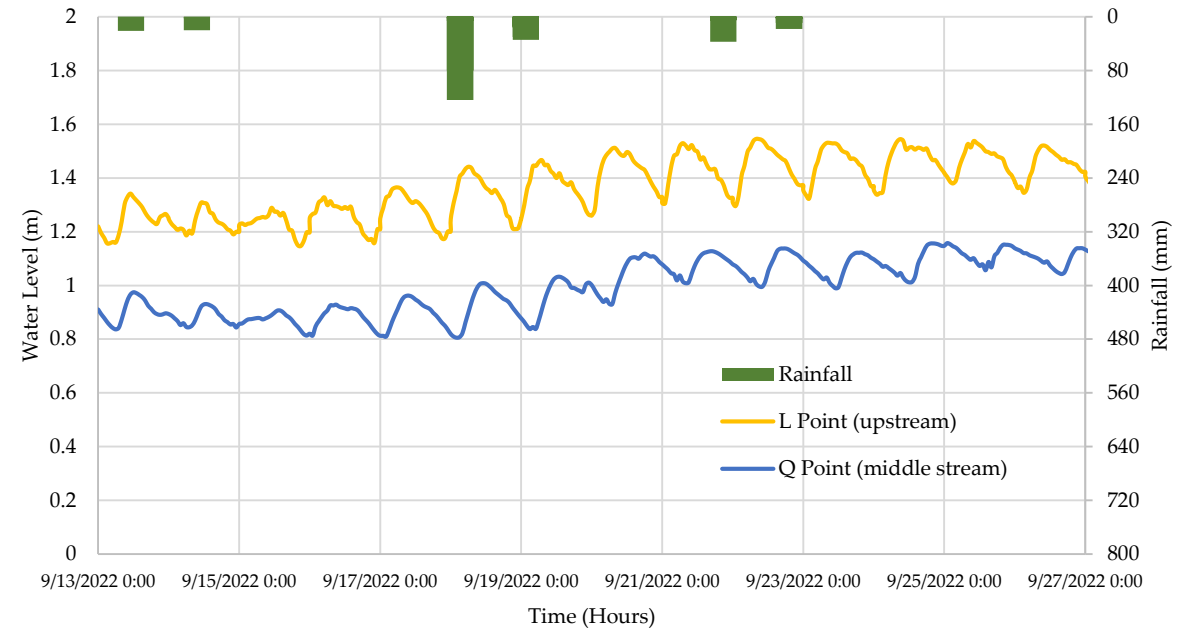
Result and Discussion

Water Quantity Dynamic Analysis

Dry Season

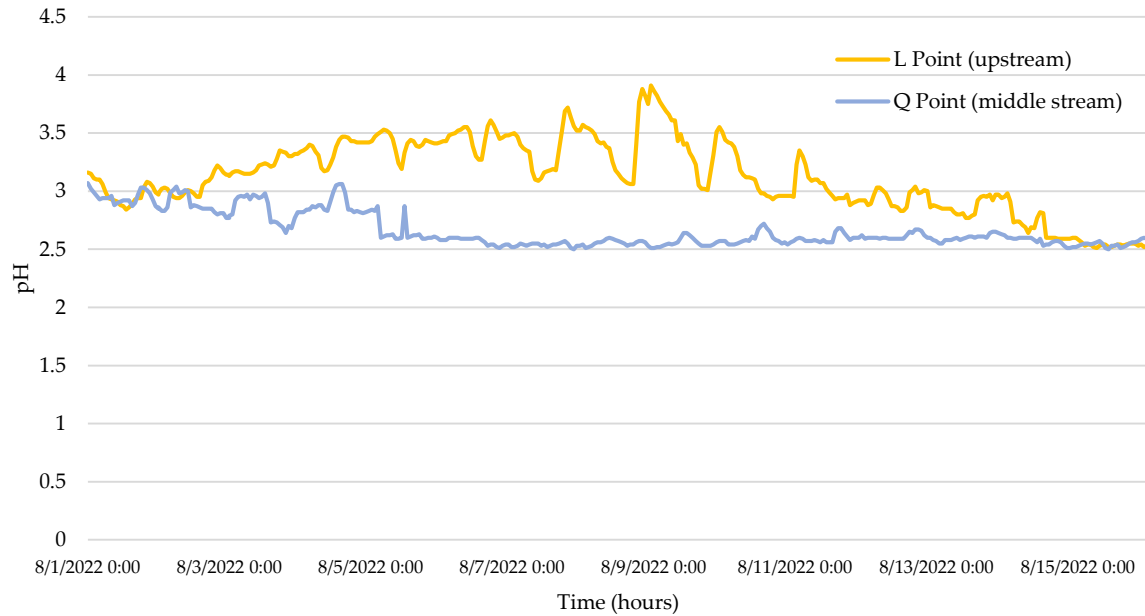


Rain Season

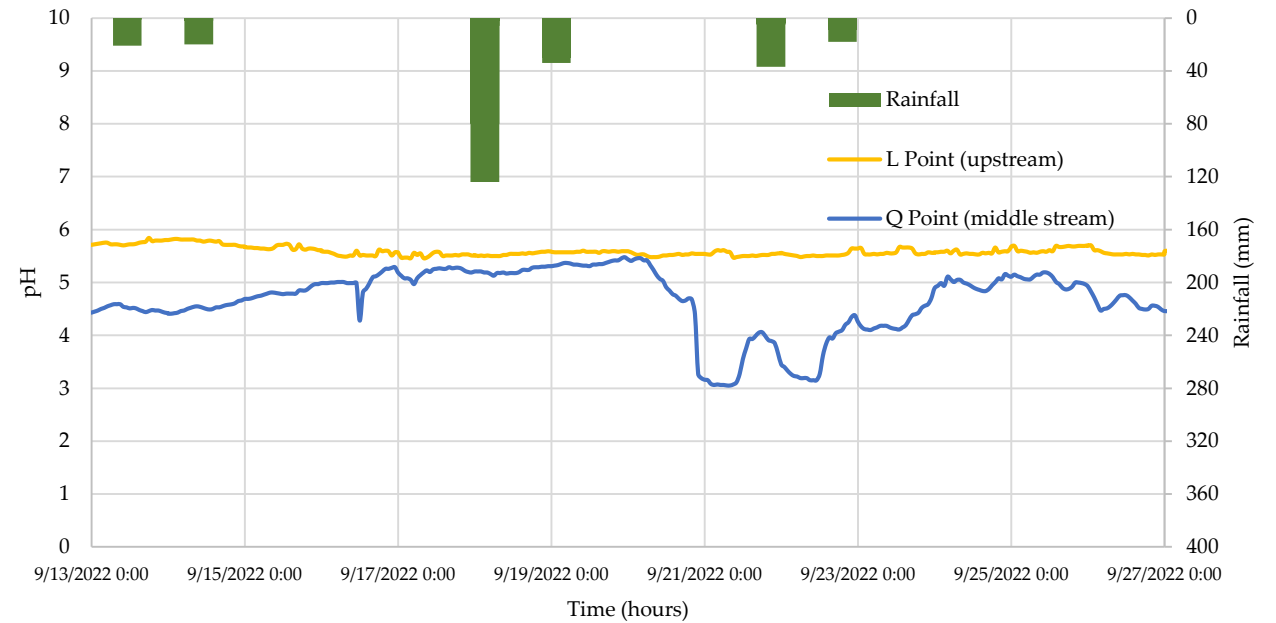


Water Quality Dynamic Analysis

Dry Season



Rain Season



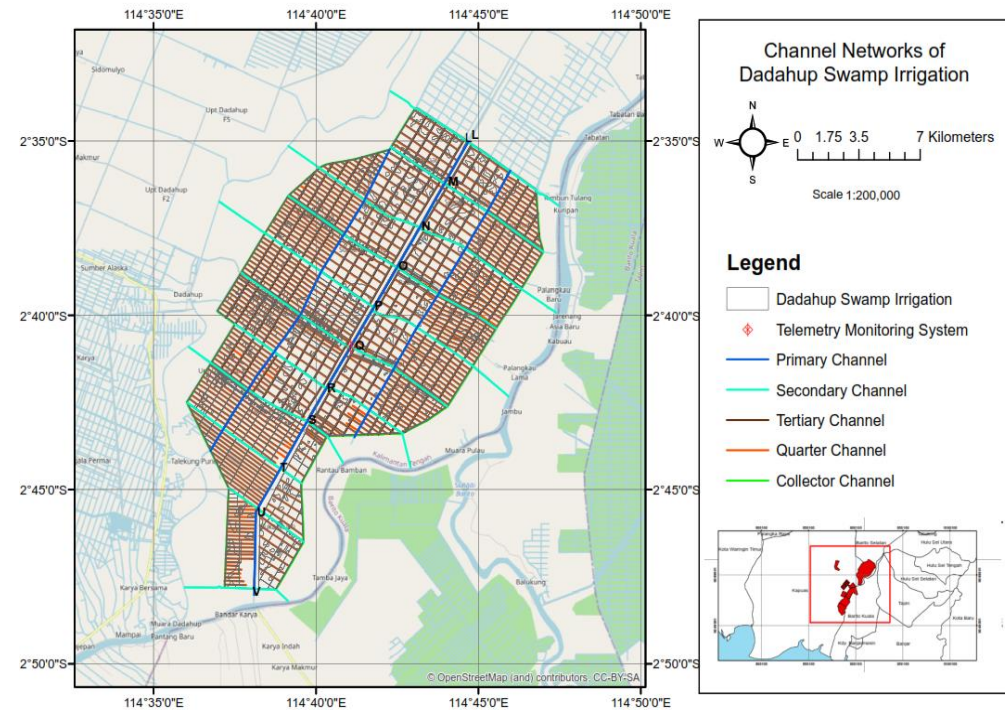
Conclusion



Suggestions

Installing Telemetry connected with Automatic Gates
↓
Operation and Maintenance Policy

Smart Water Irrigation Management



THANKS FOR YOUR ATTENTION