

**DESIGN, OPERATION, AND IMPROVEMENT OF CANAL IRRIGATION  
SYSTEM USING HYDRAULIC SIMULATIONS  
A CASE OF UPPER ATBARA IRRIGATION PROJECT**

**تصميم** قنوات الري وتشغيلها وتحسينها باستخدام التمثيل  
الهيدروليكي  
**حالة** مشروع أعالي نهر عطبرة

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