Optimizing Water Resources through Technology

Maximizing the Planet’s Resources Through Technology
Agenda

- IRZ Introduction
- Design Services
- Agronomic Services
- Proposal
A Comprehensive Global Solution

Irrigation Engineering & Design → Center Pivot, Pumping System, Wireless Automation, & Infrastructure → Irrigation Efficiency, Water Conservation Technologies

“Optimizing Water Resources Through Technology”
Maximizing Resources: “Smart Farm Technology”

- On-Farm Broadband Wireless Communication (ezWireless)
- Remote Sensing
- Infrastructure Rehab
- Real-Time data, Weather & sensors

Irrigation Technologies & Services

- Irrigation Engineering Design
- Feasibility Study
- Pump and pipeline Design
- Systems Optimization
- Hydraulic Modeling

Irrigation Engineering

- Irrigation Scheduling
- Soil Moisture Monitoring
- Crop Evapotranspiration
- Reclaimed Water Use
- Environmental Monitoring

Resource Conservation

- Energy Efficiency
- Power & Water Tracking
- Water Conservation Plan

Irrigation Management

Since 1984

“Optimizing Water Resources Through Technology”
Columbia River Irrigation Projects
- IRZ engineers will design turnkey, integrated systems (engineering design, water and energy sustainability) from 1,000 to 100,000 hectare
  - Development of Irrigation Master Plan and Feasibility Studies
  - Efficient Center Pivot layout, maximizing production
  - Energy efficient Pump Stations (river, canals,) and booster stations design
  - Efficient and cost effective Mainline and sub-main using hydraulic modeling design tools
  - Water resources development including groundwater, well development, river, reservoirs
Irrigation Design & Development

Top Photos:
15,000 hectare project

Bottom Photos:
3000 hectare project

“Optimizing Water Resources Through Technology”
2012 IRZ designed this 14 x 1 MW pumping station (18000 Horsepower) with flow rate of 30000 m³/hour (132000 gpm)
Detail Center Pivot Cluster and Valve Design
Hydraulic Models and Design

- Develop a Hydraulic Model of pipeline and pumping System
- Provide Optimal Design of Large Scale Irrigation
- Quickly Evaluate Potential Changes
- Determine the Best System Operation
Integrated Water Management & Energy Conservation Services

IRZ Services over 100,000 Hectare using real-time Soil Moisture Sensors, Weather Stations, and Wireless Technologies:

> Water Savings: 10%-15%
> Energy Savings: 10%-20%
> Saved 10 Billion Gallons Water/Year
> Saved 35 Million Kwh Energy/Year
> Saves Fertilizers
> Increase yield and quality
Real-Time Global Soil Moisture Monitoring and Evapotranspiration
Nozzle Problem
47000 Hectare irrigation layout Africa 2012
IRZ Center Pivot Design Project in China
IRZ Center Pivot Design Layout in Brazil

Sugarcane
15000 Hectare Pipeline layout, Oregon USA
Center Pivot Cluster System Design
Electrical Panels, Variable Drive
Electrical Substation
Smart Farm

Wireless Internet on Farm, Alabama, USA

Wireless Internet Cloud

Wireless Internet Pivot

Wireless Internet Pumps
Proposal: Engineering Feasibility Study

- Site visit of farmlands
- Survey topography, soil and water resources
- Design optimum center pivot layout
- Collect climate data
- Determine crop evapotranspiration requirements
- Calculate total rate and volume of water needed
- Design pump stations, pipeline, electrical and power, infrastructure (valves, clusters, filters, roads, etc.)
- Develop feasibility study
  - Capital costs
  - Power cost
  - Operating costs
  - Schedule & timeline for construction
Engineering Design Services

- Provide turn-key engineering design:
  - Center Pivot layout, pumping system, Pipeline network, power system, Automation, valves, roads, and infrastructure
  - Scope of Work
    - site/soil investigation
    - engineering assessments civil/ mechanical/ structural/ electrical engineering
    - Alternative design identification & analysis
    - Groundwater/river resource assessment
    - draft & final design report including detail drawings
    - engineering cost estimates for construction, operations and maintenance
    - contract bid documents
Sample Timeline & Cost for 65,000 Ha

- Feasibility Study
  - 90 Days
  - $75,000

- Engineering Design Services
  - 12 Months
  - $6-$7 Million
The Lindsay Team Provides:

- Turn key irrigation design
- Efficient, durable, reliable and easy to use systems
- Complete range of irrigation products
- Advanced integrated technology
- Large project experience
- A global support network