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# Water Harvesting for Dryland Farming

## *EARTHWORKS FOR RESILIENCY IN AN ERA OF DROUGHT AND FLOOD*

APRIL 5-8, 2017

at Jalisco Jojoba in Hyder, Arizona

*Learn about Earthworks for Dryland Farming, Land Restoration, and Water Harvesting*

Worldwide, topsoil erosion averages 30 to 40 tons per hectare (2.5 acres) a year or 30- to 40- times faster than the replacement rate of topsoil. The need for people is growing daily with hands-on skills in hydrological restoration and the integration of farming utilizing the principles that lead to ecological stability. Whether you are working on your own landscape, farm, or as a consultant, this course will grow your skills in the appropriate design and construction of structures that will reduce erosion, increase productivity, harvest & store water, and create resiliency in the ecologies that sustain us

### **The program offers an overview of:**

- Ethics and principles of permaculture as applied to land restoration and regenerative design
- Land component identification
- Natural patterning in farm application
- Water harvesting, drought-proofing and erosion mitigation systems applications
- Earthworks & soil renovation techniques and machinery applications.
- Planting structures and guild development
- An emphasis on dryland strategies

**The following systems will be explained and participants will be able to assist in surveying, mapping and construction of various elements of:**

- Water harvesting structures
- Soil armoring
- Anti-evaporation strategies
- Water flow harvest structures
- Dryland drains and roads
- Erosion mitigation structures

**A major component of this course will be hands-on skill development where we will develop on-site earthworks with large earthmoving equipment:**

- Landform discovery and mapping
- Introduction to Fluvial Geomorphology
- Water flow calculation
- Use of survey equipment
- Soil testing for earthworks
- Construction flagging
- Appropriate earthworks system application for dryland context
- Soil decompaction strategies, no tillage, top dressing, compost application
- Working appropriately with equipment operators
- Equipment overview and application
- Dryland production swale development and systems linking
- System planting and commissioning
- Additional hydration strategies

[\*Note: If you are interested in this course, we would tailor the earthworks to the specific site and promote it based on the actual systems that would be put in place]

DAY	Session 1 • 8:30-10.30	Session 2 • 11-12.30	Session 3 • 2-3.30	Session 4 • 4-5.30	Evening Sessions
April 5 Wednesday	Welcome and Introduction - Water for Every Farm (45 minutes) 1. Logistics 2. Intro to Course 3. Brad	Water Potential - Calculations and Considerations, Assessment of Rainfall to Run-On Opportunities and Soil Testing with Brad Lancaster	Whole Farm Design Process - Erosion Triangle - Run-off to Run-on, Sun/Shade - Anti-Evaporation Strategies with Brad Lancaster	Water Harvesting Structure Construction Planning Practicum with Brad Lancaster	
April 6 Thursday	Earthworks Strategies for Water and Nutrient Harvesting for Varied Landscapes and Purpose	Site Assessment and Surveying Techniques	Survey and Flagging - Field Work	Earthworks Construction Supervision - Continued Field Work	
April 7 Friday	Introduction to Fluvial Geomorphology	Native Pollinator and interstitial planting strategies	Armoring, Spillway Development, Erosion Control and Run-on Development - Field Work	Field Work Continued	Road Construction & Maintenance Video With Bill Zydeck
April 8 Saturday	Decompaction of Soils, Soil Biology Boosting, Swale Seeding & Planting Techniques, Crop Patterning for Water and Nutrient Retention	Field Work Continued	Field Work Continued	Wrapping the Bundle - Next Best Steps	