

Batavia Greenhouse Builders Ltd.

# Training Plan



*Grand Turk Solar Desalination  
Greenhouse for Water + Food™*



## Summary

This *Training Plan* report is 'Deliverable 6' of the Grand Turk Solar Desalination Greenhouse (SDG) Viability Study. It is addressed to the supporting agency, CIDA INC; people and government of Turks and Caicos Islands (TCI); suppliers and advisors to the project, and potential investors and financiers.

Our goal is to build a Solar Desalination Greenhouse in Grand Turk, Turks and Caicos Islands to provide a new source of fresh water and food. A training program will provide the structure to develop the skilled local people to work with the innovative technologies used in operating the greenhouse. Atmospheric water vapour processing will provide the fresh water for greenhouse hydroponics and field crop irrigation. Fresh water, requiring testing and certification will flow to an adjacent plant for premium brand bottled water.

The employee plan, organization, and recruitment sequence are discussed. Training will benefit the country by increasing its agricultural capacity and ability to provide fresh water for its inhabitants and visitors. A permanent increase in the community's knowledge base will result.

Training needs are assessed in the context of the current system and the need to achieve desired performance. Training is likely to be focussed on youth to assist in solving chronic unemployment of young people who have successfully completed their schooling. Results of a questionnaire distributed to high school and community college students in Grand Turk are discussed. Survey replies assist in understanding the current knowledge level of youths about horticulture, fresh water and business concepts. Target groups for training are considered, emphasizing women as recipients of training.

Details of a training plan are reviewed and a content outline is provided. The outline encompasses greenhouse horticulture, equipment operation, and a safety program and environmental management plan. Actual delivery of training is considered primarily for startup with variation and extension for succession and continuing education.

Training resources in the country (focussed on the Turks and Caicos Islands Community College) and from Canada are discussed.

Methods for measuring effectiveness of training and meeting goals of quality assurance are discussed. Impact of training on individual employees and their contribution to company goals are examined.

The personnel likely to be involved in training greenhouse employees are profiled.

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# Training Plan

## *Grand Turk Solar Desalination Greenhouse for Water + Food™*

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# Training Plan

## *Grand Turk Solar Desalination Greenhouse for Water + Food™*

### 1 Training Program Rationale

#### 1.1 Introduction

This report is addressed to the Canadian International Development Agency Industrial Cooperation Program (CIDA INC) as *Deliverable 6 of the Contribution Agreement E4936-K060831 with Batavia Greenhouse Builders Ltd. for the Viability Study — Solar Desalination Greenhouse — Turks and Caicos Islands.*

#### 1.2 Project goals and objectives

The project's goal is to build a Solar Desalination Greenhouse (SDG, Fig. 1-1) in Grand Turk (GT), Turks and Caicos Islands (TCI). The object is to provide fresh water and food by:

1. Bringing saline groundwater into a greenhouse and encouraging evaporation of pure water molecules into the air inside the building;
2. Cooling the greenhouse space by evaporative cooling;
3. Condensing pure fresh water out of the greenhouse air with a coil cooled by 15 °C saline groundwater pumped from depths of 400–500 metres; and
4. Irrigating the greenhouse crop with the condensed fresh water.
5. Distributing potable water to the community and a water bottling plant.

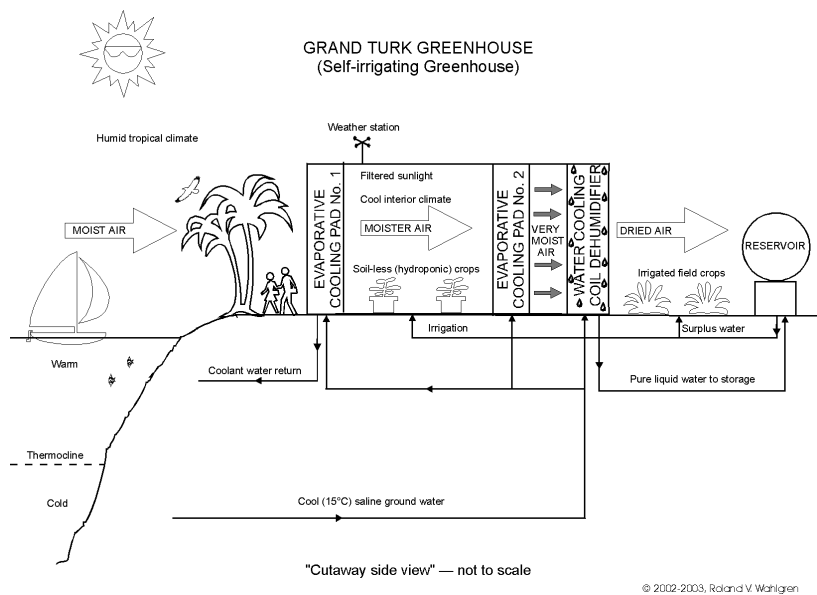


Fig. 1-1. Components of a solar desalination greenhouse.

Skilled people are needed to operate the GT SDG. Our purpose for a training component in the SDG project aligns with objectives stated succinctly by the Stanford School of Medicine: Health and Safety Department (1998).

*The broad objectives of training should be to:*  
*Match the training with specific job requirements.*  
*Enable the successful trainees to acquire and apply the training...;*  
*Specify the criteria for successful performance;*  
*Focus on the trainee's needs, not on what the trainer knows.*  
*Elicit target behavior (acceptable performance) from the trainees.*

As a result, the GT SDG will function properly and become an asset to the regional economy of Grand Turk.

Assessment of training needs required a series of steps and procedures. Five previous Viability Study reports provided essential background for this *Training Plan* report. The *Technical Feasibility Study* report (Wahlgren, 2002) described the historical development of solar desalination greenhouse technology and presented details of our proposed site on Grand Turk. It presented a thermodynamic simulation model, water production forecasts and crop models. The results of the study included greenhouse climate values, plan and section drawings of buildings, equipment requirements, energy consumption estimates, and approximate capital cost. The *Financial and Commercial Viability Study* (Crocker and Wahlgren, 2002) discussed sections of the *Business Plan* devoted to human resources. The *Regulatory Framework Analysis* (Merry, 2002) contained sections on employer and employee regulations and labour issues. The *Environmental Impact Assessment* (Hall, 2002; McNary Wood and Turner, 2002) highlighted many issues that will affect the training program to meet corporate objectives of environmental stewardship and occupational health and safety. The *Gender and Social Integration Analysis* report (Holm, 2002) identified and described target groups for training. It also addressed how to include women and youth in GT SDG training programs. The present report continues these discussions.

Knowledgeable individuals from both TCI and Canada connected with the project, along with the community college on GT and Kwantlen College in British Columbia, will be assigned to support or deliver the planned training.

A training plan shows how training will be implemented. The effectiveness of training can be gauged within our small company culture that encourages dialogue between team members. A culture of continuous training translates into superior quality assurance.

The positive projected impacts of training on TCI and the GT SDG operating company are discussed in later sections of this report.

### **1.3 Rationale**

The fundamental reason for an in-house training program for the Grand Turk Greenhouse is related to the need for skilled people to work with the innovative technologies used for the production of water and food. Fresh water will be condensed from the ambient moist air for greenhouse hydroponics and field crop irrigation. Some fresh water, requiring testing and certification will flow to an adjacent premium water bottling plant. Surplus fresh water will be allocated according to community demands. There will be a variety of commodity vegetables and smaller plantings of specialty crops. For such a unique enterprise, training has to be customized. A blend of introductory level texts and course excerpts (used with written permission) will provide the overview. Hands on activity will teach concepts specific to the SDG operation. Teamwork skills are essential.