



WALKING ON WATER

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Instructor: Phil Lewis

## Statement of the Problem:

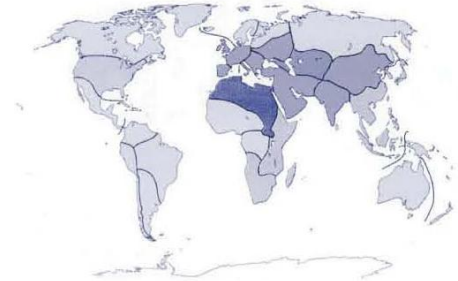
The availability of water is a global problem. Over 20% of the world's population does not have access to safe drinking water.

More than 2.2 million people die each year from diseases related to contaminated drinking water.

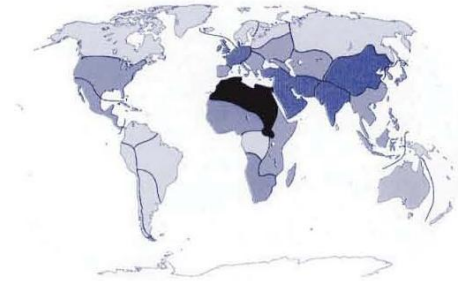
Over 450 million people today in 29 countries (mostly in Africa and the Middle East) are suffering from chronic water shortages. Which translates to roughly 1/5th of the world's population.

The intention of this IPRO team is to develop a product in which could become the catalyst to the implementation of rainwater harvesting systems to the urban and rural residents on a mass scale, specifically within the United States.

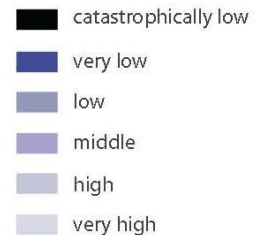
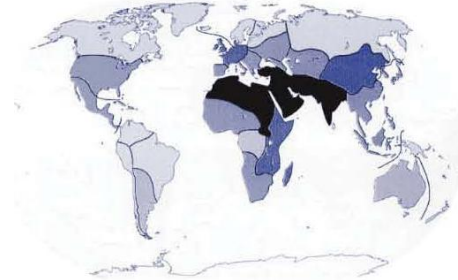
1950



1995



2025



Global Rainwater Availability



## Goals of the Project:

The team's purpose is to develop a system that will harvest rainwater and advance the work of previous IPRO teams focusing on harvesting condensate water from air conditioners. The team goal is to design and test a system that is affordable and to develop a marketing plan to promote the product in big box type stores.

### Design Phase:

- consideration of alternative materials
- consideration of alternative sizes
- cost comparisons between different iterations
- create drawings, 3D model, and renderings
- build and test prototype

### Marketing Phase:

- determine target market
- hand out surveys and document the results
- provide statistical data to support reasons for product
- advertise product and capabilities



## Organization of the Team:

Team Member	Skills	Learning needs	Expectations	Team Structure and Tasks
Sean Murray (312)-402-8766 smurray2@iit.edu	-Architecture -Problem solving -Graphic design	-To learn how to market a idea that has been through multiple design phases.	To have a learning experience that involves design	Design: Sizes and dimensions prototype building <b>Time Keeper</b>
Declain McCloat (708)-280-0711 dmccloat@iit.edu	-Architecture -Creative -Finding the middle ground	-Essays and develop speeches -Spelling	To continue learning team management skills	Design: build and test prototype <b>Team Leader</b>
Michael Gubser (314)-707-4099 mgubser@iit.edu	-Architecture -Problem solving -Creative	-Learn more about leadership and communication within a team	To create a functional product that can be sold	Marketing: statistical data to support product
Mohammad Al-Sabah (312)-420-6022 malsaba@iit.edu	-Architecture -Rhino -Model making	-How to transition from designing stage to marketing	A grea't final presentation	Presentation: 3d renderings and drawings
Adam Newman (630)-669-5935 anewman2@iit.edu	-Architecture -Auto CAD -Adobe Suite	-To develop a marketing strategy and presentation	A presentation that teaches consumers how to harvest rainwater	Presentation: 3d model and graphics <b>I-Groups Moderator</b>
Alysa Kirkpatrick (720)-244-2653 akirkpa1@iit.edu	-Architecture -Inventing new ideas -Display of artistic ability	-Selling an idea or product to marketing	To create a product that generates an interest in rainwater harvesting	Design: model making and sample testing
Juan Martinez (773)-510-5623 jmarti21@iit.edu	-Psychology -Creative -Has unorthodox / outside of the box ideas	-Develop an understanding of market aspects	How to test prototype designs	Marketing: research into surveying and demographics
Muqadas Munir (773)-759-0016 mmunir@iit.edu	-Business -Thinking outside of the box -Time management	-Learning to design prototypes	To create a tangible final product	Communications: internal contacting the team and keeping all information current <b>Minute Taker</b>
Shuana Martin (773)-358-0774 smart5@iit.edu	-Biology -Creative -Problem solving	-To learn how to design and develop communication skills with the design team	To make a project that has the potential impact on society	Communications: Public relations Tasks include contacting business and Pentair <b>Agenda Maker</b>



## Progress Toward Goals:

### Design Phase:

- research existing rainwater harvesting systems
- brainstorm with information learned through research
- site visit to Pentair Water Company
- group design charrette
- design / construction of first prototype
- contact Uni-Lock and Perma-Pave for possible contributions of material supply
- create and distribute survey
- research into the financial considerations of the product

### Marketing Phase:

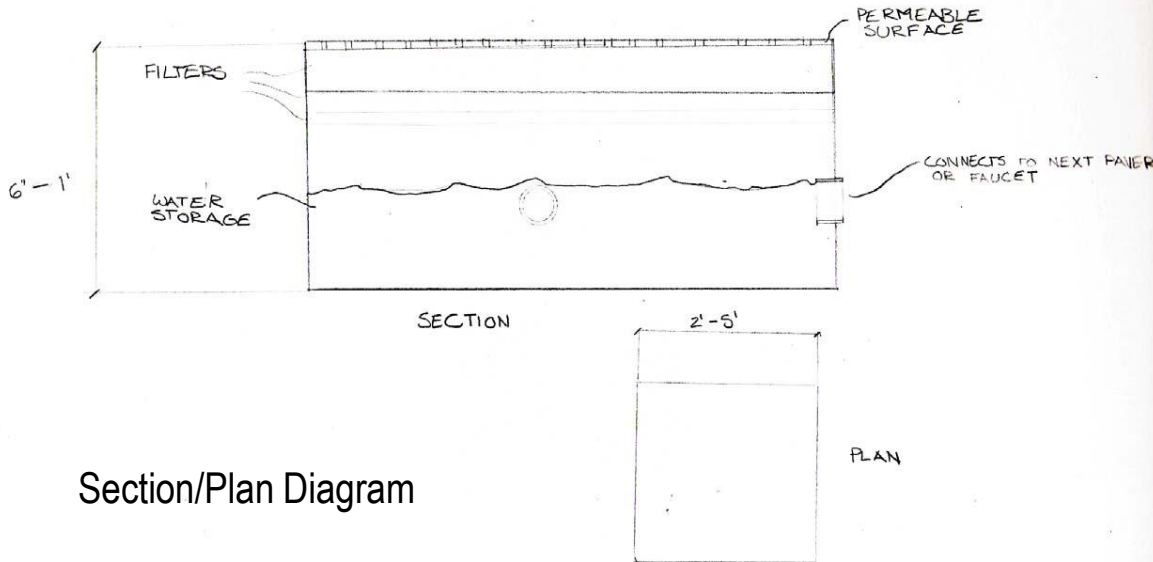
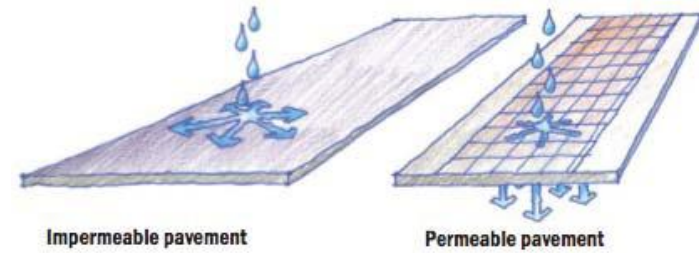
- conceptually developing a product with the potential consumer in mind
- conceptually creating a easy to use and maintain product
- sustainably product – (material usage, maintenance, etc.)



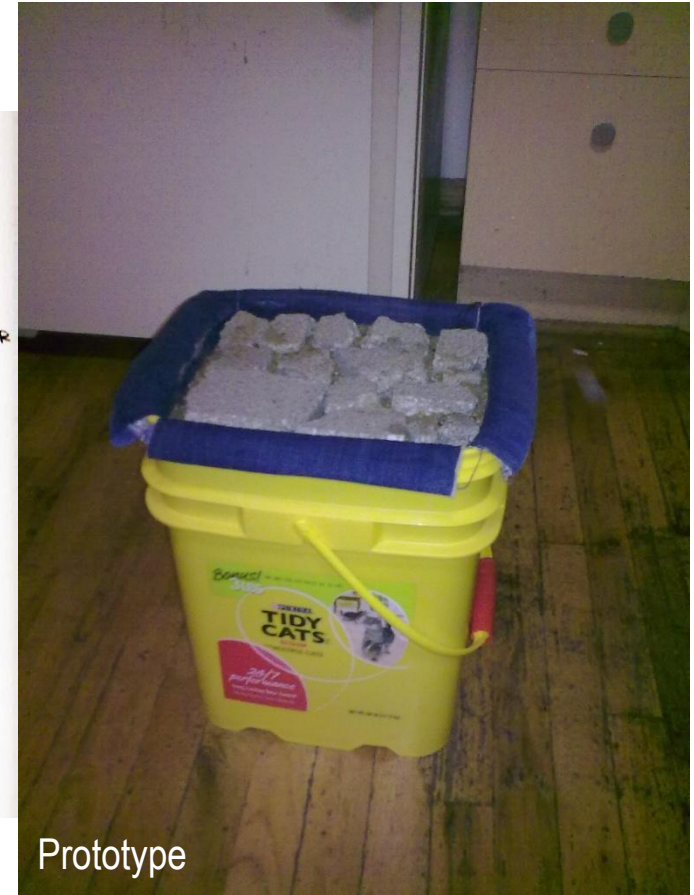
# Schematic Design

## Walking on Water Concept:

- Individual pavers or paving slabs which allow water to pass through them
- Pavers or slabs sit on top of catchment devices
- Water can be stored to be used at a future time



Section/Plan Diagram



Prototype

# Progress Toward Goals:

- o **Project Name** : IPRO 344
- o **Project Description** : Rainwater Harvesting
- o **Project Length** : 8 Weeks
- o **Start Date** : 25-May-10  End Date 16-Jul-10
- o  Number of Weeks 5
- o **Working Days** : Monday - Saturday
- o **Today's Marker** : Yes
- o **Holiday's Marker** : No

Level	Task	PIC	Start Date	Finish Date	WD	DC	DR	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8																		
								(5/24/10 - 5/30/10)	(5/31/10 - 6/6/10)	(6/7/10 - 6/13/10)	(6/14/10 - 6/20/10)	(6/21/10 - 6/27/10)	(6/28/10 - 7/4/10)	(7/5/10 - 7/11/10)	(7/12/10 - 7/18/10)																		
								21	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b>1</b>	<b>Project Plan</b>		<b>25-May-10</b>	<b>10-Jun-10</b>	<b>15</b>	<b>13</b>	<b>2</b>																										
1.1	Research		25-May-10	2-Jun-10	8	13	-5																										
1.2	Writing		3-Jun-10	10-Jun-10	7	6	1																										
<b>2</b>	<b>Survey</b>		<b>8-Jun-10</b>	<b>1-Jul-10</b>	<b>21</b>	<b>3</b>	<b>18</b>																										
2.1	Compose Survey		8-Jun-10	12-Jun-10	5	3	2																										
2.2	Conduct Survey		12-Jun-10	25-Jun-10	11	-2	13																										
2.3	Analyze Results		25-Jun-10	1-Jul-10	6	-12	18																										
<b>3</b>	<b>Research</b>		<b>25-May-10</b>	<b>17-Jun-10</b>	<b>21</b>	<b>13</b>	<b>8</b>																										
3.1	Initial Visit to Pentair		3-Jun-10	3-Jun-10	1	6	-5																										
3.2	Internet Research		29-May-10	15-Jun-10	14	9	5																										
3.3	Analyze Research		15-Jun-10	17-Jun-10	3	-4	7																										
<b>4</b>	<b>Midterm Prestation</b>		<b>10-Jun-10</b>	<b>17-Jun-10</b>	<b>7</b>	<b>1</b>	<b>6</b>																										
4.1	Compose Presentation		10-Jun-10	15-Jun-10	5	1	4																										
4.2	Practice Prestation		15-Jun-10	15-Jun-10	1	-4	5																										
4.3	Present		17-Jun-10	17-Jun-10	1	-6	7																										
<b>5</b>	<b>Prototype</b>		<b>25-May-10</b>	<b>17-Jun-10</b>	<b>21</b>	<b>13</b>	<b>8</b>																										
5.1	Design		27-May-10	20-Jun-10	21	11	10																										
5.2	Build		20-Jun-10	1-Jun-10	-11	-7	-4																										
5.3	Testing		1-Jun-10	5-Jul-10	30	8	22																										
<b>6</b>	<b>Deliverable for IPRO Day</b>		<b>20-Jun-10</b>	<b>12-Jul-10</b>	<b>19</b>	<b>-7</b>	<b>26</b>																										
6.1	Poster		1-Jul-10	10-Jul-10	9	-16	25																										
6.2	Brochure		15-Jun-10	17-Jun-10	3	-4	7																										
6.3	Pentair Prestation		1-Jul-10	8-Jul-10	7	-16	23																										
6.4	Final Presentation		8-Jul-10	12-Jul-10	4	-21	25																										

## Major Obstacles Encountered:

### - design process / execution

- material considerations
  - filter / filter fabric
  - filter box assemblies (parameters)
- rainwater run-off
- connectivity of modular units
- flexibility
- structural integrity of the assembly
  - material
  - molding (recycled plastic materials)
  - extruded plastic forms

### -creating a public interest and desire for a product of this nature

- marketing strategy

### -cost / affordability





## Anticipated Major Challenges:

- development of filtration system
- maintenance concerns of the filtration system
- finalizing of prototype designs
- structural stability



Needs / Questions / Requests:

