

# UVA Bay Game

## Systems Thinking and Sustainable Business

- Game Setup
- Introduction to the UVA Bay Game
- Game Play
- Debrief

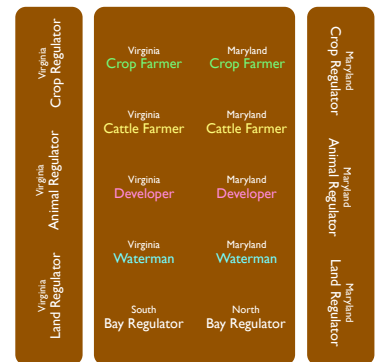


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Version 1-3

## TIMETABLE

- Select a role, login and acquaint yourself with game materials (15 min)
- Introduction to the UVA Bay Game (10 min)
- Enter Life Balance Goals (5 min)
- Game play (7 rounds; 90 min)
  - Regulators go first
  - Other players make decisions
  - Gamemaster advances round
- Debrief (30 min)

## GAME SETUP



Some roles will need to be played by two players:  
Animal Regulators for MD and VA, MD Developer

[ChesapeakeClub.org/CrabKwonDo](http://ChesapeakeClub.org/CrabKwonDo)

Crab Kwon Do (2008), 54 seconds

## Introduction to the UVA Bay Game



## Chesapeake Bay Watershed

- Six states, 64,000 square miles
- 17 million human residents
- 3,600 species of plants and animals
- 500 million pounds of seafood/year; total economic value = \$1 trillion per year
- Threatened by **overfishing** and **nutrient loads** from agricultural fertilizers, animal wastes, sewage treatment plants, urban runoff and air pollution

## UVA Bay Game

- Large-scale, agent-based simulation of the Chesapeake Bay watershed
- Seven regional watersheds, eight player classes

### Game Objectives

- Individual ... achieve "life balance"
- Community ... "Save the Bay"

### Educational Objectives

- Increase awareness of interrelationships
- Facilitate communication about complex systems
- Explore policy choices





Watermen



Crop Farmers



Animal Farmers



Developers



Regulators



Watermen

- Percentage of season to pot?
- Percentage of season to dredge?
- Purchase new gear?



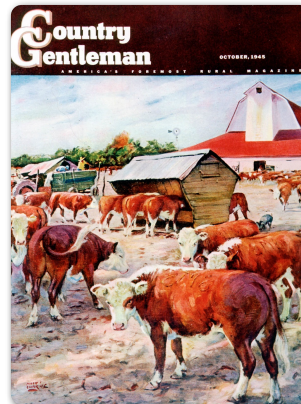
Crop Farmers

**Farming Method**

- Conventional
- Sustainable
- BMP - Low
- BMP - High

**Land Use**

- Cover crops?
- Fallow land?



Animal Farmers

**Farming Method**

- Conventional
- Sustainable

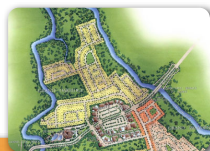
**Waste Treatment**

- Basic Waste Treatment
- Nutrient Removal
- Covered Waste Storage

**Land Purchase and Development**

- Greenfield - Conventional
- Greenfield - Sustainable
- Infill - Conventional
- Infill - Sustainable

**Sale of Developed Parcels -- (when)**



Developers



**Chesapeake Bay**

- Catch Limits
- Length of Dredging Season
- Length of Potting Season

**Land Development**

**Taxes and Fees**

- Conventional Development Tax

**Incentives**

- Infill Development Incentive
- Sustainable Development Incentive



Regulators



Watermen



Crop Farmers



Animal Farmers



Developers



Regulators



Citizens

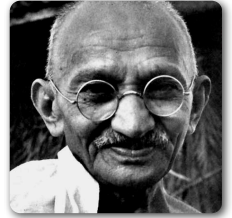
## Establishing "Life Balance" Goals



ECONOMIC



ENVIRONMENTAL



SOCIAL

- 100 points to allocate among three important aspects of human well-being -- economic, environmental and social

- Regulators make their decisions **FIRST** (about 10 min at first)
- **THEN**, watermen, farmers and developers make their decisions (about 6 min at first)
- **Countdown timers** will help keep us on track; decision periods get *shorter* as the game progresses
- **RECORD** your **observations and expectations** on the last page of your packet
- **RECORD** your **decisions and results** on the next-to-last page of your packet



## Game Play

# 2000

Regulator Decisions

00 : 10 : 08

2000 2002 2004 2006 2008 2010 2012

# 2000

Player Decisions

00 : 06 : 10

2000 2002 2004 2006 2008 2010 2012

# 2002

Regulator Decisions

00 : 10 : 08

2000 **2002** 2004 2006 2008 2010 2012

**2002**

Player Decisions

00 : 06 : 10

2000 **2002** 2004 2006 2008 2010 2012

**2004**

Regulator Decisions

00 : 07 : 56

2000 2002 **2004** 2006 2008 2010 2012

**2004**

Player Decisions

00 : 06 : 10

2000 2002 **2004** 2006 2008 2010 2012

**2006**

Regulator Decisions

00 : 06 : 10

2000 2002 2004 **2006** 2008 2010 2012

**2006**

Player Decisions

00 : 06 : 10

2000 2002 2004 **2006** 2008 2010 2012

**2008**

Regulator Decisions

00 : 05 : 17

2000 2002 2004 2006 **2008** 2010 2012

# 2008

Player Decisions

00:05:17

2000 2002 2004 2006 **2008** 2010 2012

# 2010

Regulator Decisions

00:05:17

2000 2002 2004 2006 2008 **2010** 2012

# 2010

Player Decisions

00:05:17

2000 2002 2004 2006 2008 **2010** 2012

# 2012

Regulator Decisions

00:05:17

2000 2002 2004 2006 2008 2010 **2012**

# 2012

Player Decisions

00:05:17

2000 2002 2004 2006 2008 2010 **2012**

Game Debrief



## What did you learn ...

- ... about **interrelationships?**
- ... about **choices?**
- ... about **impacts on Bay health?**
- ... about **working together?**
- ... about **who should pay** to maintain a healthy ecosystem?
- ... about **what it will take** to restore the Chesapeake Bay?

### The Chesapeake Bay Watershed

	<b>Virginia</b> (James)	<b>Maryland</b> <b>Pennsylvania</b> (Potomac)
Area (000s acres)	10,130	31,042
Population (000s)	3,214	10,665
GDP (\$billions)	117	462
Unemployment (%)	2.3%	2.3%
Crop Farmers	14,758	45,240
Cattle Farmers	6,105	10,038
Land Developers	na	na
Watermen	2,500	2,500
Nutrient Runoff (million lbs)	77	248

**Not All Watersheds Are Created Equal**