EAST PHILLIPS INDOOR URBAN FARM

Business Plan
Version One
03.22.2018

MINNESOTA
SUSTAINABLE DEVLOPMENT GROUP
Contact Information: Clarence Bischoff
clarence.bischoff@gmail.com
651-239-5722
www.MNSDG.com

Statement of Confidentiality

This is a confidential document containing a business concept and an operational, marketing, and financial plan (Hereon referred to as the "Plan") that has been made available by Blue Water Aquaculture (Discloser) for the purposes of raising funds from investors.

It is understood that the recipient ("Recipient") of this document shall use it only for the purpose of evaluating the Plan. Recipient shall limit disclosure of the Plan to any third party (whether an individual, corporation, or other entity) without prior written consent of the Disclosure.

Table of Contents

INTRODUCTION

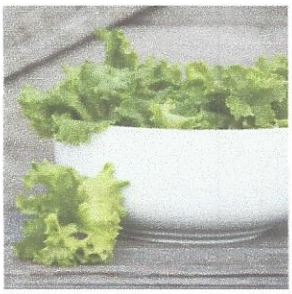
Mission

The mission of the East Phillips Indoor urban Farm is to provide safe, tasty, nutritious, and affordable food products using a decoupled indoor urban system that represents the best technology and equipment available in the world. It represents food production that is sustainable, environmentally friendly, and conserves and protects our natural resources.

Indoor urban is the symbiotic relationship between fish, beneficial bacteria, and plants. In a decoupled indoor urban system, water from an aquaculture system is fed to a hydroponic system where the by-products are broken down by nitrifying bacteria into nitrites then nitrates. After the nitrates are utilized by the plants the clean water is recirculated back to the aquaculture system with virtually zero waste. By creating optimum environments for all three of these living organisms, we are creating an efficient ecosystem that we benefit from.

Our Products:

Vegetables and Greens



We provide quality produce to our customers year-round. We have partnered with and continue to partner with commercial and research institutions to gather nutritional information and to grow produce that has much more nutritional value.
It is local and does not the adverse ecological impact of fossil-fuel base systems and avoids the long-distance transport and long-delays from field to plate.
We will provide cherry tomatoes, peppers, cucumbers, romaine lettuce, kale and other products to meet customer needs.

Fruits

Fresh tasty strawberries will be available 365 days a year. Controlled environment agriculture (CEA) can provide opportunities to produce strawberry fruit in a sustainable manner. Both aerial and root zone environments can be controlled in CEA and maintained in the optimum range to maximize the productivity of strawberry plants. Nutrient solution can be recycled to save water and reduce fertilizer use, making resource use even more efficient. Use of substrate/hydroponics eliminates the necessity of soil fumigation. Greenhouse structures exclude insect pests, reducing or eliminating the necessity of pesticide application.

Fish

Walleye is recognized by most everyone in the region as a premium product:

"Walleyes have white meat and a light delicate flavor and are described as one of the "best eating of all freshwater fishes" (Carmichael et al. 1991), and "one of the most delicious of fresh-water fishes" (Cameron and Jones 1983). Skinless fillets from tank-cultured walleye

had protein contents of 20.4-20.6%, and a fat content of 0.1-0.4%, values which place them in the low fat and high protein category of food fishes (Yager and Summerfelt 1996).

Commercial Kitchen/Food Hub

While it is a MNSDG project, the East Phillips Commercial Community Kitchen will be an ancillary nonprofit food service/product incubator for those in the neighborhood and surrounding areas. This kitchen will assist those wanting education and resources to start a successful business around food and food products. The company will rent out space and provide education and hands on training with a sliding fee schedule depending on income. The kitchen will rent to local businesses that just need space in a commercial kitchen at a market rate. The kitchen will be set up to provide further processing for small to medium food businesses that need to outsource some processing. This will be on a contract basis and used to generate income for the kitchen's programing and to provide job training.

Location and Community Engagement:

We are in the relatively small and diverse community of East Phillips. We aim to connect with the community and wish to connect people to each other and have them partners in the process of planning, building indoor urban, and producing food together. We plan to take into consideration the connections between food production, career and technology interconnections, and art and science education[1]. These can be the bridges between people from different backgrounds and between young and old generations while molding them all into a stronger and healthier community with a purpose.

Projections Summary:

The East Phillips Indoor Urban Farm plan calls for the construction of a 80,000 square foot indoor indoor urban facility in the East Phillips Neighborhood Urban Farm Development. When complete, this will be one of the largest commercial indoor urban facilities in the country and will annually provide 233,690 lbs. of fresh fish and 310,852 lbs. of organically grown produce.

[1] https://www.ctahr.hawaii.edu/site/Bio.aspx?ID=RONTET

THE COMPANY

East Phillips Indoor Urban Farm and Commercial Kitchen/Food Hub is a MN Sustainable Development Group company. The MNSDG includes scientists, engineers, architects, accountants, attorneys, marketing professionals, managers, entrepreneurs, sustainability managers, agronomists, and other professional specialists. In addition, the MNSDG works with consultants coordinated by the MNSDG staff. The company currently focuses on the development of a local-sustainable food system (mnsdg.org).

The mission of the Minnesota Sustainable Development Group (MN SDG) is to create and restructure businesses to meet our sustainability goals. These goals are in alignment with the work of the United Nations Sustainable Development Solutions Network[2] and the science summarized by the Stockholm Resilience Center[3].

Humanitarian Purpose and Economic Development

As noted, the current priority of the MNSDG is the creation of a sustainable agriculture and food system. Food is the nexus of many of the challenges we are now facing globally and locally. There cannot be a sustainable society without a sustainable food system; and, as stated by Professor Johan Rockström, Director of the Stockholm Resilience Centre in *Big World Small Planet,* **"If we can get it right on food, then we stand a very good chance of pursuing wellbeing within a safe operating space."[4]**

In addition to the sustainability and nutritional advantages of our technology, we believe it presents a unique opportunity to support local communities from the standpoint of economic development.

Each farm facility requires skilled labor to operate which will provide a growing opportunity for living-wage jobs.

The economic impact of the industry extends well beyond benefits to the immediate indoor urban/aquaculture facility. "Upstream" industries that supply aquaculture production include agriculture, hatcheries, feed manufacturers, equipment manufacturers, and veterinary services. "Downstream" industries supplied by aquaculture include processors, wholesalers, retailers, transportation, and food services. An Oklahoma State University study examined job multipliers for aquaculture and found that upstream inputs accounted for 22 percent of jobs created, production and processing 9 percent, and that the distribution, retail, and service sectors generated 69 percent of jobs.
We are particularly excited to create opportunities for communities that have traditionally been disadvantaged and underserved. We have, in addition to East Phillips, identified indigenous tribal communities as a particularly good fit for this mission. Those communities have suffered some of the more egregious economic conditions and injustices of all. In addition, raising and catching fish is a spiritual endeavor and in cultural alignment with many tribal communities. For this reason, we are actively building relationships with Native American tribal leaders and communities in Minnesota and beyond.

---

[2] http://www.un.org/sustainabledevelopment/sustainable-development-goals/
[3] http://www.stockholmresilience.org/research/planetary-boundaries/planetary-boundaries/about-the-research/the-nine-planetary-boundaries.html
[4] lhttp://www.stockholmresilience.org/publications/artiklar/2016-05-06-big-world-small-planet-abundance-within-planetary-boundaries.html

THE Board of Directors, Professional Consultants & Financial Supporters

NOTE:

The preceding eleven pages showing the pictures and biographies of the thirty EPNI Board Members, professional consultants and financial supporters have been removed from this copy. Since some members of the City staff and council have concluded that there will be no non-municipal uses at the Roof Depot Site, we will not append supporters names to any documents until this is resolved, or without their consent.

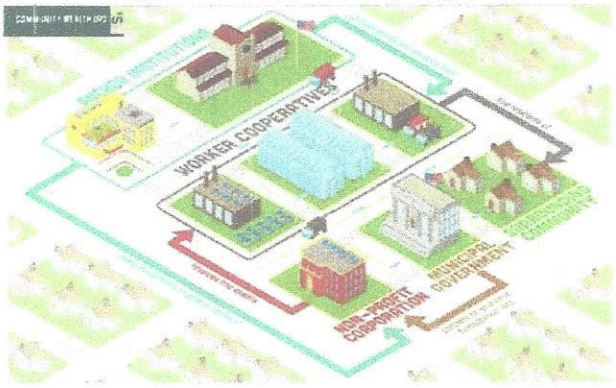
THE MARKET

Current Opportunity and Market

As noted Agriculture Economist Professor John Ikerd[5] has summarized:

"The local food movement is the leading edge of a change that ultimately will transform the American food system from industrial/global to sustainable/local. Organic foods had been the leading edge of the movement, growing at a rate of 20 percent-plus per year from the early 1990s until the economic recession of 2008. Growth in organics sales have since stabilized at around 10 percent per year. The organic food market reached $43.3 billion in sales in 2015—more than 5 percent of the total U.S. food market. Today, organic fruits and vegetables claim more than 10 percent of their markets. As organic foods moved into mainstream food markets, many consumers turned to local farmers to ensure the integrity of their foods. The modern local food movement was born."

Marketing Strategy



The East Phillips Indoor urban Farm builds on the strategy referred to as the Cleveland Model. In this model local business build on contracts with "anchor institutions in the city. This has proven particularly effective in neighborhoods, such as, East Phillips. The whole neighborhood and City add their support while the business helps the anchor institutions achieve their sustainability

[5] http://johnikerd.com/

goals. They truly become win/win relationships.[6]

https://community-wealth.org/content/cleveland-model-how-evergreen-cooperatives-are-building-community-wealth

Currently the East Phillips Indoor urban farm is the process of negotiating a supply contract for the Minneapolis Public Schools[7]. (The EPAF team is also exploring collaboration around educational and job training goals.) This may alone utilize a substantial part to the production potential. Similar supply contracts will be negotiated with nearby hospitals and other institutions. For the fish products local distributors have stated they are ready to sell all that is produced. The marketing strategy will be comprehensive in range of products and the avenues for sales.

OPERATIONS

Aquaculture/Indoor urban Technology[8]

There are many aquaculture/aquaponic technologies. The East Phillips Indoor urban Farm has chosen the RAS or Recirculating Aquaculture System and the Hydroponics Process Water Systems as the appropriate technology for our region, climate, and our sustainability values and goals.

Criteria and Assumptions

Key criteria and assumptions for the planned Indoor urban Farm include:

- The farm will be built on two floors, each 100' x 400'. Both plant and fish production must fit within this space.
- The facility will be all new construction.
- The wall heights may be designed to meet the production needs.
- Excess heat in the growing facilities will be traded for rent by channeling this to the apartments and offices in the building complex.[9]
- Fish species is initially assumed to be Walleye. However, other species such as bait fish or Golden Shiners may be considered.

---

[6] http://www.garalperovitz.com/

[7] http://nutritionservices.mpls.k12.mn.us/bertrand_weber_game_on

[9] Plantagon Model: http://www.plantagon.com/about/business-concept/the-linkoping-model/

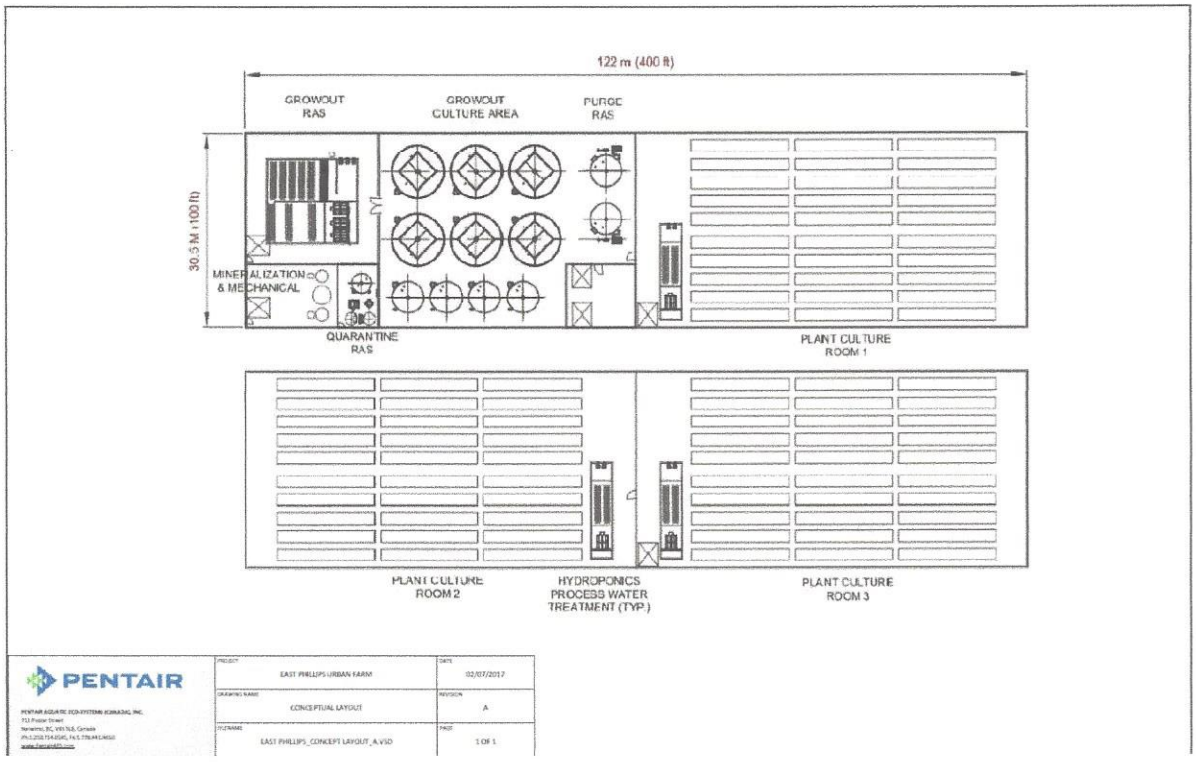
- One floor would be for vegetables to use in salads: cherry tomatoes, cucumbers, lettuces, and other greens. The second floor would be used for strawberries.

- A Recirculating Aquaculture System (RAS) is to be used to minimize water consumption, optimize control of the rearing environment, and to maximize nutrient concentrations to plant culture.

- It is assumed that the RAS will be located on the ground floor of the building due to the high floor loading rate, and due to the need for below grade sumps for the treatment equipment.

- It is assumed that the production area for each plant crop will be roughly ¼ of the facility footprint, and that each crop will have a dedicated Hydroponics Process Water System to meet the specific nutrient requirements of that crop.

Conceptual Drawing



Facility Summary

Parameter	Units	Aquaculture	Hydroponics	Total
Total Facility Area	m2	1,858	5,574	7,432
	ft2	20,000	60,000	80,000
Portion of Total Area	kg/day	25%	75%	100%
Total Fish Culture Volume	m3	600	-	600
Total Grow Bed Area	m2	-	7,191	7,191
Total Flow Rate (recirculated)	lpm	20,000	10,147	30,147
Total Feed Use	kg/day	336	-	336
Total production	mT/year	106	141	248

Hydroponics Calculations

Parameters	Units	Crop #1	Crop #2	Crop #3	Total
Plant Species	-	Greens	Tomatoes	Strawberries	
Footprint Allocation	m2	1,858	1,858	1,858	5,574
	ft2	20,000	20,000	20,000	60,000
Footprint Utilization	%	43%	43%	43%	
Grow-bed Footprint	m2	799	799	799	2,397
	ft2	8,600	8,600	8,600	25,800
Number of Beds per Rack		4	1	4	
Total Growbed Area	m2	3,196	799	3,196	7,191
	ft2	34,400	8,600	34,399	77,399
Feed Rate / Growbed Area Ratio	g/day/m2	20	100	60	
Total Feed Rate Required	kg/day	64	80	192	336
Plant Density	plants/m2	16.0	2.5	20.0	
Evapotransporation Rate	l/day/m2	6.4	40.0	8.0	
	l/day/ft2	1	4	1	
Grow Bed Depth	m	0.25	0.25	0.25	
	in	10	10	10	
Total Grow Bed Volume	m3	812	203	812	1,826
	ft3	28,666	7,167	28,666	64,499
Grow Bed Turnover	min	180	180	180	
Total hydroponics flow rate	lpm	4,510	1,127	4,510	10,147
Total evapotranspiration	l/day	20,453	31,958	25,566	77,978
	lpm	14	22	18	54
Flushing flow	% vol/day	1%	1%	1%	
	lpm avg	7	2	7	16
Yield	kg/m2/year	26.0	37.0	9.0	
Total Plant Production	kg/year	83,092	29,562	28,762	141,415

Aquaculture Calculations

Parameter	Units	Values
Feed Use / Volume Ratio	kg/day/m3	0.56
Design Feed Load	kg/day	336
Total Footprint Allocation	m2	1,858
	ft2	20,000
Treatment / Culture Area Ratio	%	30%
Culture Footprint Utilization	%	31%
Culture Footprint	m2	400
	ft2	4,306
Avg Culture Depth	m	1.5
Culture Volume	m3	600
HRT	min	30
Flow Rate	lpm	20,000
Protein content of feed	%	48%
TAN Production Rate	g TAN/kg feed	44.16
NO3-N Conversion Rate	g NO3-N/TAN	1
NO3-N Production Rate	g NO3-N/kg feed	44.16
Tank NO3-N Conc	mg/L	115
Influent Addition Rate	l/kg feed	384
Influent Water Flow Rate	lpm	89
System Exchange Rate	per day	21.5%
Average Feed Conversion Rate	kg feed/kg fish	1.15
Average Fish Density	kg/m3	80
Total annual production	kg	106,211
Standing biomass	kg	48,000
Production to Standing Biomass Ratio	-	2.21

Disease Prevention and Treatment

Biosecurity is a major concern and the facility must be kept secure with stringent safety and hygienic standards. Sensing equipment is strategically placed to monitor fish well-being always.

Permitting and Regulations

The MN Sustainable Development Group is committed to working closely with all regulatory agencies. MNSDG staff are professionally trained in these areas.

Personnel

Our projections at this point call for 35 full-time employees with a budget of 1.5 million. Our plan is to recruit and train personnel from the neighborhood as the business develops.

FINANCE

The projections given in this early version of the Business Plan are of a tentative nature based on the analysis of companies of approximately similar capacity. Detailed updated financials will be available as planning proceeds with consultants and suppliers, such as, Pentair.

The model we have used has been reviewed by the most experienced financial, marketing, engineering, and scientific experts in the field and confirmed to be appropriate.

Startup Funding

Budgetary Estimate:

The budgetary estimate provided below represents Pentair Aquatic Ecosystems' best judgment of the costs at the time that the estimate was prepared. The estimate is based on previous experience with similar projects and on a series of assumptions about project criteria and constraints, as well as Customer requirements and preferences.

Item #	General	Recirculating Aquaculture Systems	Indoor urban Mineralization	Hydroponics Process Water	Total USD
Design	$60,000				**$60,000**
Equipment		$1,350,000	$85,000	$300,000	**$1,735,000**
Support Services	$100,000				**$100,000**
Total	**$160,000**	**$1,350,000**	**$85,000**	**$300,000**	**$1,895,000**
Freight	$80,000				$80,000
Grand Total	$240,000	$1,350,000	$85,000	$300,000	$1,975,000

Assumptions And Factors Influencing The Estimate

Changing the criteria and assumptions of the estimate can have significant impact on the estimate.

- Plant and fish species selection
    - Fish species selection may significantly affect water temperature and quality requirements, culture density and volume requirements, feed rates, waste nutrient production rates, as well as overall facility productivity.
    - Plant species selection may significantly affect grow bed design, plant density, nutrient, flow, and lighting requirements, evapotranspiration rates, and overall facility productivity.
- Hydroponics growing methods
    - There is a range of different hydroponic growing methods, and grow bed designs that may be used in development of the facility. The choices made will affect water flow requirements, the efficiency of space use, and the intensity of plant production.
- Modularity:
    - If multiple independent temperature, water quality, or nutrient concentration zones are required within the facility to meet species-specific needs, it will require the development of multiple water treatment modules and will increase cost.
    - Design of the facility with fewer, larger modules will result in reduced flexibility and increased production risk, but will usually reduce capital cost due to economies of scale.
- Fish stocking size and harvest size
    - Entry of larger fish or harvesting of smaller fish will reduce the length of time that fish will be held in the system, resulting in reduced facility scale and cost
    - Inclusion of additional life stages such as brood-stock holding, incubation, and start feed will drive increased facility cost.
- Fish Handling and Management
    - Reduced handling and grading events will simplify fish management, reduce labour, and may also result in fewer larger tanks. However, such changes may also increase the size variance of harvest fish and result in poorer feed conversion rates.
    - Incorporation of features to simplify fish handling operations, such as integrated grading stations.
- Fish Cohort Timing
    - More frequent entry of smaller batches can often result in reduced facility scale and design loading rates. However, it can also result in more, smaller tanks which may increase the cost per unit volume.
- Water Quality Targets
    - Improved water quality usually requires more intense treatment and/or higher water flow rates, both of which will drive increased cost.
- Control and Automation
    - A higher degree of automation will generally increase complexity and cost but may result in reduced labor. Design fees may also be impacted.
- Project Scope Expansion

- Inclusion of scope elements as influent or effluent treatment will drive cost increase.

- Incorporation of Existing Infrastructure or Equipment
  - While use of existing buildings, equipment, and other infrastructure may reduce project scope, it may also increase the complexity of design and result in increased fees.

During the design phase of the project, MSDG and Pentair Aquatic Eco-Systems will work collaboratively to make key decisions and set design criteria to meet the specific production and financial goals of the project.

Projections Summary:

The East Phillips Indoor Urban Farm plan calls for the construction of a 80,000 square foot indoor indoor urban facility in the East Phillips Neighborhood Urban Farm Development. When complete, this will be one of the largest commercial indoor urban facilities in the country and will annually provide 233,690 lbs. of fresh fish and 310,852 lbs. of organically grown produce.

Pro Forma Balance Sheet					
Year	Startup Phase	Year 1	Year 2	Year 3	Year 4
Total Short Term Assets (cash)	380,915	1,379,571	2,877,875	5,044,227	7,525,514
Long Term Assets	7,618,300	7,540,593	7,770,666	8,000,739	7,923,032
Total Assets	**7,999,215**	**8,920,164**	**10,648,541**	**13,044,966**	**15,448,546**
Short Term Liabilities	-	544,214	1,143,936	2,005,810	2,902,106
Long Term Liabilities	4,000,000	3,677,907	3,530,370	3,301,517	2,987,188
Total Liabilities	4,000,000	4,222,121	4,674,306	5,307,327	5,889,294
Paid-In capital	3,999,215	3,999,215	3,999,215	3,999,215	3,999,215
Earnings	-	698,828	1,975,019	3,738,423	5,560,037
Total Equity	3,999,215	4,698,043	5,974,234	7,737,638	9,559,252
Total Liabilities/Equity	**7,999,215**	**8,920,164**	**10,648,541**	**13,044,966**	**15,448,546**

Pro Forma Income Statement					
Year	Startup Phase	Year 1	Year 2	Year 3	Year 4
Revenue		5,070,000	6,045,000	6,890,000	7,085,000
Cost of Goods sold		535,516	551,581	568,129	585,173
Gross Profit		4,534,484	5,493,419	6,321,871	6,499,827
Expenses					
Marketing/Sales		4,500	4,725	4,961	5,209
Rent		960,000	960,000	960,000	960,000
Utilities		1,754,393	1,807,025	1,861,236	1,917,073
Insurance		150,000	154,500	159,135	163,909
Acct/Legal		5,000	5,150	5,305	5,464
Labor		450,000	472,500	496,125	520,931
Transportation		7,608	8,388	8,388	8,807
Ongoing Consulting		34,600	34,600	34,600	34,600
PBIT		**1,202,983**	**2,081,131**	**2,826,722**	**2,918,434**
Interest Expense	-	248,325	244,551	240,583	236,413
Depreciation		74,659	77,707	77,707	74,659
Tax, 35%		295,890	603,496	865,841	900,467
Net Income	**-**	**584,109**	**1,155,378**	**1,642,591**	**1,706,895**

Pro Forma Cash Flow Statement					
Year	Startup Phase	Year 1	Year 2	Year 3	Year 4
Net Income	-	584,109	1,155,378	1,642,591	1,706,895
Depreciation		74,659	77,707	77,707	74,659
Increase(decrease) in accounts receivable					
Increase (decrease) in inventory					
Increase (decrease) in accounts payable					
Total Adjustments	**-**	**658,768.66**	**1,233,085**	**1,720,297**	**1,781,554**
Purchase of Equipment	(7,618,300)	(152,366)	152,366	152,366	(152,366)
Principal reduction in long-term debt		(322,093)	(395,861)	(473,404)	(554,913)
Increase (decrease) in cash	(7,618,300)	184,310	989,589	1,399,260	1,074,275
Cash beginning of period	7,999,215	380,915	565,225	1,554,814	2,954,074
Cash end of period	**380,915**	**565,225**	**1,554,814**	**2,954,074**	**4,028,349**

Year 1 Ratios and Calculations				
Category	**Ratio**	**Calculation**	**Ideal Range**	
Liquidity	Current Ratio	2.535	1.5 or higher	Current assets/current liabilities
Solvency	Debt-to-Asset	47%	30% or less	Total liabilities/total assets
Solvency	Debt-to-Equity	0.8987	1.5 or less	Total liabilities/total equity
Profitability	Return on Investment (ROI)	15%	10 - 14%	Net Income/Owner's Equity
Profitability	Return on Assets (ROA)	7%	5% or higher	Net Income/Total Assets
Efficiency	Operating Margin	24%	5% or higher; will increase over time	Operating Income/Revenue
Efficiency	Capital Turnover	6.07	Higher is better	Sales/Working Capital
Efficiency	Asset Turnover	0.57	Higher is better	Sales/Total Assets

APPENDIX

Site and Aerial View