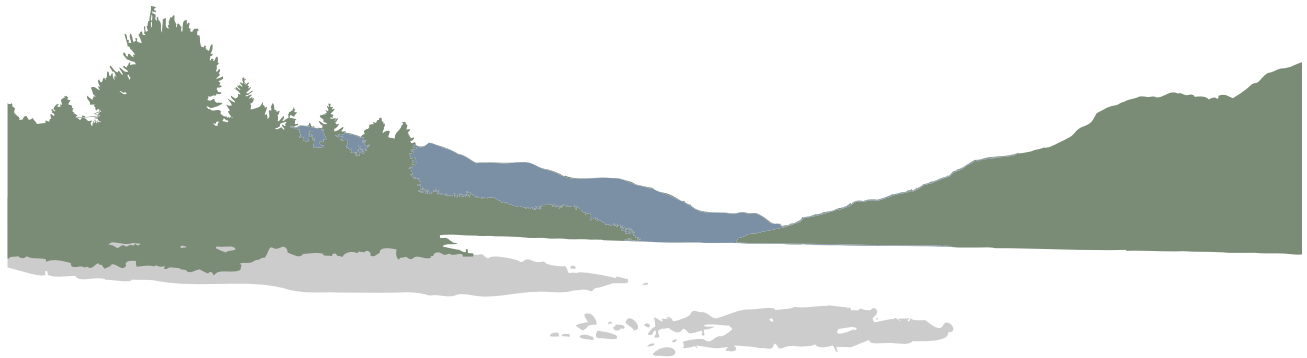


# The Village of New Denver

## Sustainable Community Plan



Part 1 - Research, Document Review, & Identification of Opportunities  
January 11, 2010



**Have Blue**  
Consulting & Design Ltd.

in partnership with

**endemic mountain design**

## Table of Contents

Executive Summary	3
1.0 Introduction	4
2.0 Background Research, Drivers and Resilience	4
2.1 Background Research	4
2.2 Drivers	5
2.3 Synergies of the two drivers	8
2.4 Rationale for Resilience	9
3.0 Resilience Indicators and Methodology	10
3.1 New Denver Indicators	10
3.2 Permaculture Indicators	11
3.3 Evaluation Methodology	11
3.4 List of Documents	13
4.0 Assessment of Resilience in New Denver	14
4.1 What We Found - Opportunities	14
4.2 Doing and Saying Well	15
4.3 Initial Recommendations Towards Resilience	16
5.0 Next Steps	17

## Appendices

Appendix A - Document Reviews - What We're Saying	A - 1
Appendix B - Document Reviews - What We're Doing	B - 1
Appendix C - Document Reviews - Summary of Score and Findings	C - 1
Appendix D - Permaculture Principles	D - 1

## Executive Summary

This report comprises Phase 1 of the development of an Integrated Sustainable Community Plan (ISCP) for the Village of New Denver which is a requirement of receiving transfers from Federal Gas Tax Revenue.

The goal of this report was to provide a holistic and resilient systems evaluation of what the village is saying and doing to build community sustainability. This evaluation was done based on the premise that peak oil and climate change are two of the most serious threats to the Village of New Denver in meeting its most basic needs.

Evaluating how we will those needs (ie. clean air, water, food, shelter, warmth) with the threat of climate change and without the abundance of energy that oil provides will challenge typical business as usual practices. Furthermore, ensuring that our higher level needs are also satisfied so that we may continue to enjoy our high standard of living will force the community to become more resilient in adapting to these future threats.

Our review of village documents and bylaws found many exciting and innovative things that are being done by the village to adapt to this future. The New Denver Community Heritage Values workshop done in 2008 illustrates that self reliance and resilience are in the bones of the community and a strong part of village heritage.

Two of the most visionary documents that stood out in the review were the Food Charter and the BC Climate Action Charter. Both of these documents recognize the importance of addressing the need to maintain and increase local diversity through relocalization of food and energy needs as much as possible. There are enormous opportunities for the village to implement the concepts from these charters into existing bylaw structures in order to move towards a more self-sufficient, resilient and diverse community.

We have also identified many opportunities for the village to go beyond the status quo and set a standard for building community resilience into town planning actions. It is our challenge to the village of New Denver to consider this question:

Is New Denver ready to consider a paradigm shifting change and imagine a future town bylaw system with Food and Energy bylaws as priorities with all other bylaws being informed by them?



## 1.0 Introduction

In 2005, the Corporation of the Village of New Denver signed an agreement between the federal government, the Province and Union of British Columbia Municipalities (UBCM), which outlined the terms for the transfer of Federal Gas Tax Revenue to the municipality. As part of this agreement, New Denver has agreed to develop an integrated sustainability community plan (ISCP). The team of Have Blue Consulting and Design Ltd. and Endemic Mountain Design were hired by the Village of New Denver to develop this plan.

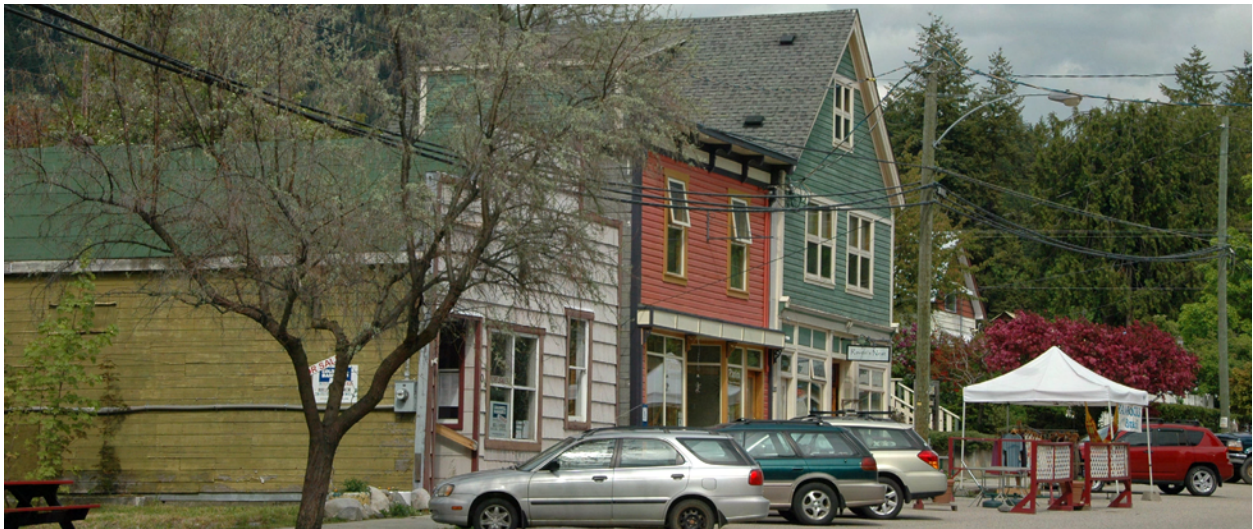
This report comprises Phase 1 of the project and the first step in the development of the ISCP. The objectives of this phase of the project were the following:

***Develop a set of indicators and methodology to be used to evaluate sustainability.***

***Apply these indicators to a cross section of reports and village bylaws.***

***Identify successful projects that the village has undertaken in the past.***

***Identify gaps and overlaps in the village's sustainability planning activities.***



## 2.0 Background Research, Drivers and Resilience

### 2.1 Background Research

In preparation for this project, background research was considered an important first step. Extensive research was conducted into sustainability plans and systems theories from British Columbia, Canada and around the world. As well as looking at other sustainable community plans, practical and theoretical research was done on sustainability, in an attempt to better understand the concept. This ranged from doing energy and material inventories in our own lives, from raising chickens to how much energy and emissions we were creating as individuals and as a team executing this project.



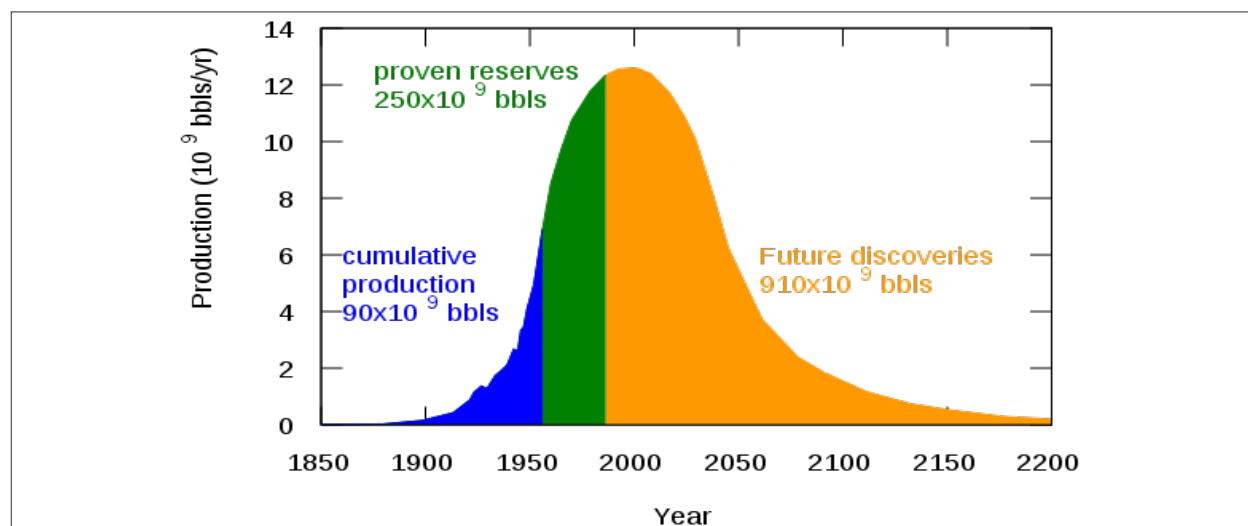
Most sustainable theories and plans we evaluated have at their root the balancing of economic, environmental and social principles. Many expand their focus to more principles. The plans we found to be the most effective were the ones that incorporated the idea of resilience. Specifically, the Transition Movement<sup>1</sup> provides excellent direction on the application of lenses (future threats) through which to assess what the future of the community will be like. The Transition Town movement is founded on research stating that oil reserves have either reached peak production or will in the near future, and that climate change needs to be addressed quickly to avoid significant changes in global, and local climate. Coupled together as drivers – the synergy of peak oil and climate change is empowering local action all over the world. The Transition Town movement has been finding and documenting real world solutions to living creatively in a world with less oil.

## 2.2 Drivers

This report follows a similar structure to the Transition Movement of using peak oil and climate change as major drivers of effective sustainability planning. Peak Oil and Climate Change are the lenses that will test the resilience of New Denver's ISCP by ensuring the community is addressing two of the most pressing problems of our age.

### 2.2.1 Peak Oil

Peak oil is the phenomena of world oil production hitting a peak and thereafter beginning to decline. Confronting peak oil forces us to grasp the implications of an energy constrained future. The decline of oil supplies was first predicted by the geophysist M. King. Hubbert in the mid 1950's. Real time data subsequently confirmed his predictions when United States peaked in oil production in the early 1970's. It has since been shown to follow a similar pattern in the many countries that have also hit peak production.



**Figure 1: Hubbert's Curve Graph<sup>2</sup>**

Figure 1 illustrates the classic shape of Hubbert's curve as applied to total world oil production, with time on the horizontal axis and oil production represented on the vertical axis.<sup>2</sup> As we cross over the top of Hubbert's curve (i.e. reach peak oil production) there is something else making the roll down the backside even more worrisome. That realization comes from the relationship between the Total Energy available and the Net Energy left for society's requirements. This relationship is known as the Energy Returned on Energy Invested (EROEI). Typically, the easiest sources of oil (ie. conventional oil) are exploited on the way up the curve, leaving increasingly more difficult reserves to develop as we near the peak and go over the top.

<sup>1</sup> Hopkins, Rob. <http://www.transitiontowns.org>

<sup>2</sup> Hubberts Curve Graph – retrieved from: [http://en.wikipedia.org/wiki/File:Hubbert\\_peak\\_oil\\_plot.svg](http://en.wikipedia.org/wiki/File:Hubbert_peak_oil_plot.svg)

Practically speaking we require increasingly more energy to get the remaining reserves out of the ground. These non-conventional reserves such as tar sands and shale oil require increasingly more technology and energy to just to break even and meet society's needs.

As oil supplies begin to decline the price of both gasoline and diesel will inevitably begin to increase. This in turn can be expected to cause further instability in the global economy which is so highly dependent on cheap oil. The figure 2 illustrates how BC gasoline prices fluctuated almost 200% since their peak in 2008. As we roll over the crest of peak oil the rise and fall of oil prices are expected by some observers to continue and grow bigger and more unstable.<sup>3</sup> Figure 2 could be viewed as a real time close up of what life near the peak of Hubbert's curve may look like.



**Figure 2:**  
**24 Month Gasoline Prices in BC<sup>4</sup>**

As a global society, we rely heavily on oil for the way things operate. In fact “the world’s transportation systems are over 90% dependent on oil and oil by-products.”<sup>5</sup> The summer of 2008 was an eye-opener for many in BC as to how dependent we are on oil, not just for mobility, but for our high quality of life, as high gasoline prices not only decreased the amount of kilometers driven, but it also raised the price of food, decreased personal spending, and caused many to re-think their choice of vehicles.

The statistics from the Village operations and surrounding community highlight this dependence on oil:

***The Village’s fleet is fully dependant on oil.<sup>6</sup>***

***The community at large relies on oil for 54% of its energy needs.<sup>7</sup>***

<sup>3</sup> John Micheal Greer. Archdruid Report. <http://thearchdruidreport.blogspot.com/>

<sup>4</sup> GasBuddy.com. (2009). BC Gas Prices: Historical Price Charts. Retrieved December 10th, 2009 from the World Wide Web: [http://www.bcgasprices.com/retail\\_price\\_chart.aspx](http://www.bcgasprices.com/retail_price_chart.aspx)

<sup>5</sup> “The Oil Depletion Protocol” by Richard Heinberg (<http://www.oildepletionprotocol.org/getinformed/oilandtransportation>)

<sup>6</sup> Carbon Nuetral Kootenaty Project – New Denver 2008 – Municipal Operations – Draft for Review

<sup>7</sup> Community Energy and Emissions Inventory – 2007 – This was a postal code boundary inventory so applies to areas outside the village boundaries, it gives a good prediction of area usage.



The relative abundance of oil over the last century coupled with its high energy density<sup>8</sup> has made it particularly suitable in meeting our transportation needs and rendering the long distances we are used to travelling relatively meaningless. Unfortunately there is no ready replacement that packs the energy punch that oil provides us which will make those distances meaningful once again.

The exact date of peak oil may be hard to predict or see until we have crossed over it and have some hindsight on the situation. However, even the previously conservative (ie. business as usual) EIA<sup>9</sup> estimates are being adjusted to account for peak oil sooner than previously predicted. There is consensus from a wide variety of sources that if we are not already there, then oil production will peak before 2020.<sup>10</sup>

The high price of oil and its products - gasoline and diesel - not only changes how people travel (or don't travel), but it also affects other areas of everyday life. We don't often consider how many items in our household are made from oil, and how dependent our way of life is on oil. Plastics, computers, paints, pesticides, fertilizers, asphalt and concrete are just a few of many products containing oil. In an energy constrained future, it will not be possible to continue to enjoy the same standard of living, without reducing our societal addiction to oil.

## 2.2.2 Climate Change

Tackling climate change can be a daunting prospect for both individuals and communities and indeed the world as was witnessed in Copenhagen Climate talks in late 2009. The Village of New Denver as a signatory of the BC Climate Action Charter (BCCAC) is to be congratulated. The BCCAC is an important document that outlines community commitments towards reductions in green house gases. Our team views it as an appropriate energy use charter. It offers opportunities to filter out the poor energy choices such as diesel and gasoline. Some of the BCCAC's core principles make commitments to supporting more local, integrated and healthy communities. These core principles are directly in line with building community resilience.

A report by the Columbia Basin Trust in 2007 called, "Climate Change in the Canadian Columbia Basin: Starting the Dialogue"<sup>11</sup> discusses the possible effects that climate change will have on the entire Columbia drainage basin, of which New Denver is a part of. The report predicts a possible average temperature change range of between 1.1 to 1.3°C by the 2020s, and as high as 5.0°C by the 2080s. While this may not seem like a significant change the report states, "With a 3°C mean annual temperature increase, as projected by the 2050s, West Kootenay communities would have a mean annual temperature similar to what Osoyoos has today."<sup>12</sup>

The report also frames decision-making for communities that considers climate change. Often, planning decisions are made that provide immediate solutions, such as improving infrastructure, but there is a need to think more long-term in the face of climate change and the need for resilience. For instance, widening a road involves a very short timeframe for implementation, and the lifespan of that "short-term fix" needs to be weighed with the long-term decision-making framework needed to address climate change.

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8 Energy density is the amount of energy per unit kg. As an example, gasoline has an energy density of 44,400 kJ/kg. This is nearly 100,000 times higher than the best Lithium-ion batteries which provide approximately 0.460 kJ/kg of energy density. (<http://www.allaboutbatteries.com/Battery-Energy.html>)

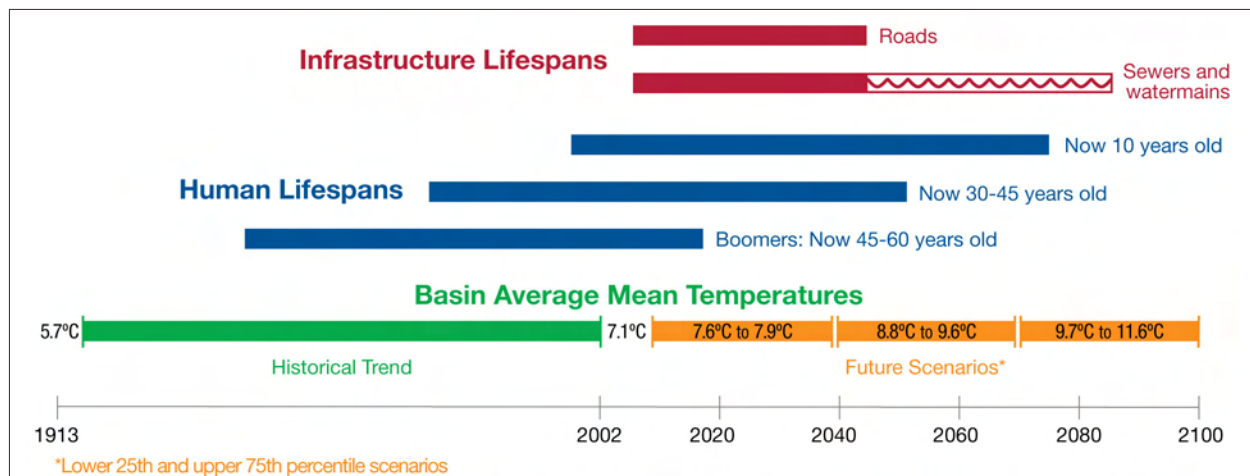
9 The U.S. Energy Information Administration (EIA) is the statistical and analytical agency within the U.S. Department of Energy.

10 Sam Foucher. Peak Oil Update - July 2009: Production Forecasts and EIA Oil Production Numbers. <http://www.theoil Drum.com/node/5521>. Accessed 2009-12-17. The statement they made was that barring any major new discoveries "the output of conventional oil will peak in 2020 if oil demand grows on a business-as-usual basis."

11 Gosal, K., Murdock, T., Pearce, C., & Sandford, R. (eds.). (2007) Climate Change in the Canadian Columbia Basin: Starting the Dialogue. Golden, BC: Columbia Basin Trust. Retrieved December 15th, 2009 from the World Wide Web: [http://www.cbt.org/uploads/pdf/Climate\\_Change\\_in\\_the\\_Canadian\\_Columbia\\_Basin\\_-\\_Starting\\_the\\_Dialogue.pdf](http://www.cbt.org/uploads/pdf/Climate_Change_in_the_Canadian_Columbia_Basin_-_Starting_the_Dialogue.pdf).

12 *ibid*, p. 8





**Figure 3:**  
Decision-making framework in the context of climate change<sup>13</sup>

Other possible effects of future climate change in the Columbia Basin include:

- Warmer winter, nighttime and summer temperatures
- Increasing Glacial Melt
- Less Winter Snowpack at Lower Elevations
- Changing Streamflow Patterns – Earlier Spring Peak Flows, Lower Summer Flows
- Wetter Conditions, with High Variability
- Climate migrants

The main impacts on future decision-making and climate change in the Columbia Basin will be:

- Quality of Life:
  - Water Supply
  - Food Supply
  - Ground Transportation
  - Community Infrastructure & Safety
  - Public Health
- The Economy:
  - Hydro-Electric Power
  - Forestry
  - Tourism & Recreation
  - Agriculture

*The report also stresses the need to accept that change is inevitable and adapting to this change and being ready for it is vital. How does the village prepare? By building community resilience, adaptability and diversity.*

## 2.3 Synergies of the two drivers

One of the great synergies resulting from transitioning to a peak oil future is that it offers a controlling feedback on climate change by reducing the village's carbon footprint. While on a relative basis New Denver's footprint is small compared to large municipalities, improvements are cumulative and New Denver can be a positive example for others to follow suit. Other things such as valuing diversity in the areas of environment, social, cultural and economic issues will be most important tools for adapting. It has been shown by ecologists and scientists from the Resilience Alliance that ecological and community resilience may be our best defense against the uncertainty brought on by climate change.<sup>14</sup>

<sup>13</sup> ibid, p. 11.

<sup>14</sup> Folke, C et al "Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations". April 2002





One of the strong components of resilience is an emphasis on relocalization. Given New Denver's secluded location in the Slocan Valley, it means that the distances that are now taken for granted (like driving to Nelson) will have more meaning. Diversifying and relocalizing community inputs where possible like food, energy, water and shelter will take on greater importance. Resilient thinking means not only a relocalization of essential needs, but a relocalization of skills and knowledge. Building houses with local materials, and for local conditions, using local trades people not only makes a system more resilient, but develops a heritage and culture that is reflective of the community's place in a unique setting. It also means valuing local knowledge, and through the sharing of that knowledge developing a strong community, and a strong economy.

A precautionary approach dictates that we must start acting and preparing for Peak Oil & Climate Change. In a world built around fossil fuel abundance, this is no small task. However, we believe that the Village of New Denver, being a small progressive municipality has already shown excellent examples of community resilience. New Denver is also in a fine position to set the standard in showing the region, province and country how to build community resilience.

## 2.4 Rationale for Resilience

The idea of resilience was a reoccurring theme throughout our research on sustainable community plans and sustainability theory. Resilience applied at a community level means finding ways to adapt to future changes without overstressing itself or collapsing. It is not only about meeting the sustainability principles, but balancing them all equally to ensure future prosperity.

*"'Resilience' as applied to... integrated systems of people and the natural environment, has three defining characteristics:*

- *The amount of change the system can undergo and still retain the same controls on function and structure*
- *The degree to which the system is capable of self-organization*
- *The ability to build and increase the capacity for learning and adaptation"*<sup>15</sup>

A less academic and perhaps more visual example come from the Longman Dictionary of Contemporary English:

*"the ability of a substance (**or community**) such as rubber (**or New Denver**) to return to its original shape after it has been pressed or bent"*<sup>16</sup> (***Italics added for illustration***)

We wanted to move away from the terms 'sustainability' and 'sustainable' because these terms have become marketing buzzwords for environmental performance. A car that achieves 10%, 30% or even 50% better energy efficiency is a great step towards reducing dependency on oil for energy, but is still susceptible to energy scarcity and fluctuating oil prices. Alternatively, consider a house that can produce enough energy for itself through renewable sources of power, while allowing the inhabitants to enjoy the same quality of life as an example of resilience.

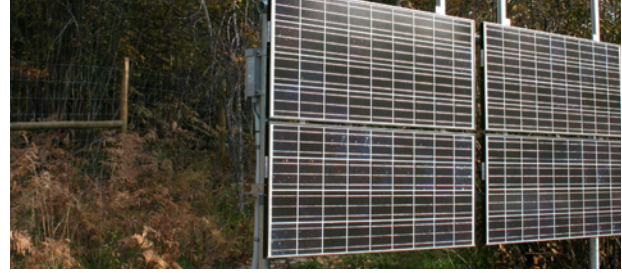
Resilience is important to this plan because it provides the framework for decision-making. Thinking about whether or not a decision meets the four (or twelve) principles of sustainability is important, but thinking about how resilient that decision makes the community provides clearer goals, and a more accurate measure of what can be considered truly sustainable.

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<sup>15</sup> Resilience Alliance website. <http://www.resalliance.org/564.php>. Accessed 2009-12-16

<sup>16</sup> Online version Longman Dictionary of Contemporary English. <http://www.ldoceonline.com/dictionary/resilience>. Accessed 2009-12-16



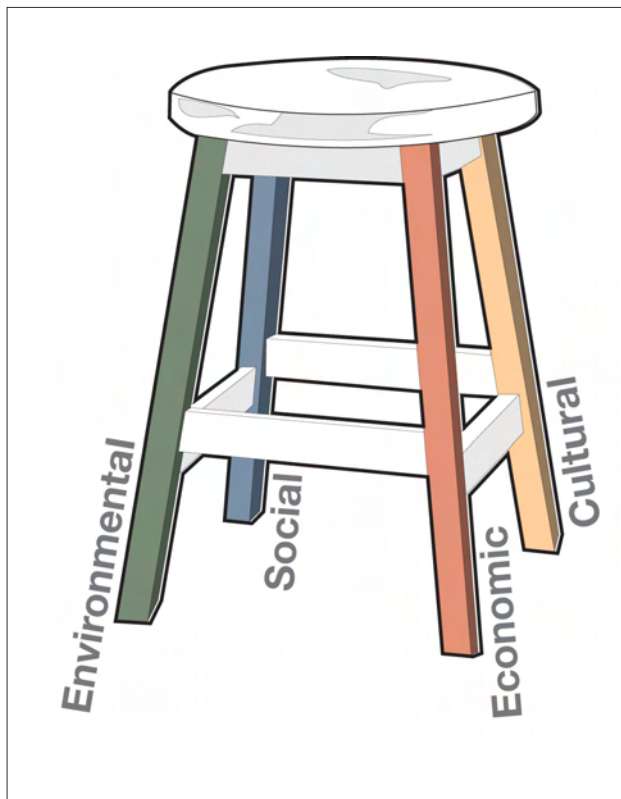


## 3.0 Resilience Indicators and Methodology

In evaluating resilience it was decided to utilize two sets of indicators to evaluate the reports and bylaws, the New Denver sustainability model and the twelve principles of permaculture. The first set of indicators was used to provide an additional perspective in the document reviews and scoring, and evaluate how well New Denver was meeting its own criteria of sustainability. The permaculture principles were used as a second set of indicators to cross reference and serve as a benchmark for the New Denver principles.

### 3.1 New Denver Indicators

The first set of indicators are those set out by the Village of New Denver's Request for Proposals. Those are: Environmental, Social, Cultural, & Economic.



With sustainability viewed as a four-legged stool, each leg must provide balance in supporting the weight of the stool. They all make up a sustainable society. The economy tends to receive the majority of the focus in municipal decision-making. Environmental, social and cultural aspects are more difficult to define and understand, and as a result are often not considered as heavily in the decision-making process. This chair reminds us of the balance that is required.

It is important to understand that each element supports sustainability equally. An example of this is placing too much emphasis on short term economic gain. This inevitably results in sacrificing the environment, resulting in long term cultural and social problems. As a society we are now faced with the task of paying the price (socially, culturally, and environmentally) for decades of short sighted economic policies.

Continuing business as usual mentality of unlimited resource consumption is not resilient. Whether those resources are environmental, social, cultural, or economic, given an uneven distribution over time the stool will eventually collapse.

**Figure 4:**  
**New Denver Sustainability Indicators**



## 3.2 Permaculture Indicators

The ethics and twelve principles of Permaculture served as the second set of indicators in the document evaluation. Permaculture was conceived as a “creative design response to a world of declining energy and resource availability.”<sup>17</sup> Its unique scalar and non-linear approach is very suitable to examining complex systems. Although originally conceived of and tested in perennial low maintenance gardens of David Holmgren and Bill Mollison. Its applicability across scales and systems provide universal principles of application and make it ideal to assess and implement resilience at a community level. Indeed, the original intent as the name implies was to provide a basis for permanent culture.

Compared to the current industrial paradigm that is characterized by brute force and high energy inputs, permaculture tends towards resourceful solutions that make appropriate use of locally available energy and materials.

The Transition Towns<sup>18</sup> movement has seen a practical application of community oriented permaculture principles across many communities in many countries. The successful experiences of Transition communities show the strength in the application of the permaculture principles at a community level.

Appendix D presents permaculture and its ethics and principles in more depth.

## 3.3 Evaluation Methodology

### 3.3.1 Saying vs. Doing Scores

A total of twenty village documents were evaluated for this first phase of the project. It became clear early on in our reviews that there was a difference between documents. Some documents were more research-based, while others were the documents responsible for achieving the desired results. As an example, the Community Wildfire Protection Plan offered great suggestions towards becoming more resilient, but it did not possess any power to ensure that those suggestions were implemented. By contrast the Zoning Bylaw could have built in strong requirements for green design, urban agriculture, etc. and would have the ability to ensure that those standards are being met. We differentiated between these two types of documents by grouping them into two categories.

***What is being said (Appendix A) – comprising studies, plans and visions***

***What is being done (Appendix B) – comprising of village bylaws and the OCP and two charters.***

### 3.3.2 Document Evaluation


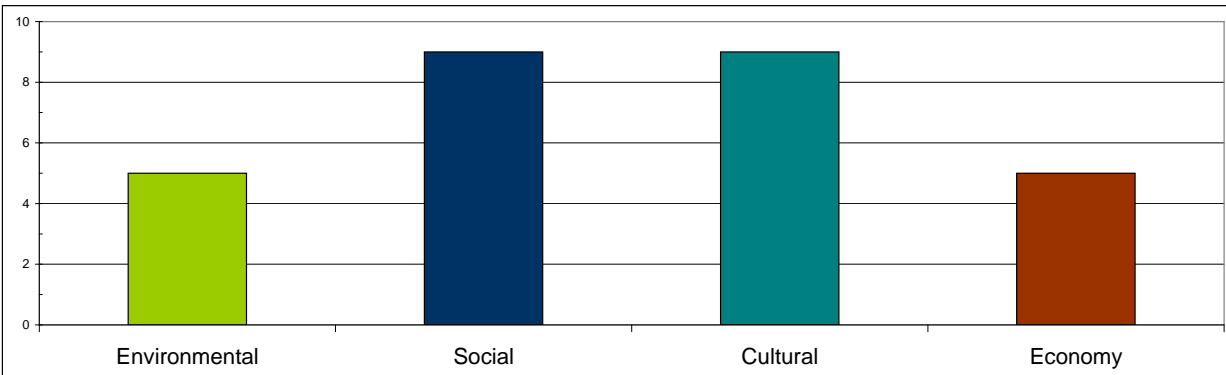
Documents were evaluated independently by each member of our team according to the four New Denver indicators and the twelve Permaculture indicators. Each indicator was given a score between zero and ten, with ten being the best possible rating. It should be noted that receiving a score of 10 on any one indicator did not come lightly in this review. A 10 was considered a perfectly resilient piece of the system of which there are few examples. Despite the tough scoring standards many reports did receive high scores on certain indicators (including 10's), these are highlighted in closer detail in later sections of this report. An example of the scoring template can be found on the next page:

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17 David Holmgren. 2002. Permaculture: Principles and Pathways Beyond Sustainability – pg xxi

18 Rob Hopkins. 2008. The Transition Handbook – From oil dependency to local resilience. The authors blog is great source of inspiration of communities all over the world building resilience, see - <http://transitionculture.org/>.



 <b>Have Blue</b> <small>Consulting &amp; Design Ltd.</small>		in partnership with <b>endemic mountain design</b>		<b>Client:</b> Village of New Denver <b>Project:</b> Sustainable Community Plan <b>Date:</b> 2009-10-29
<b>Report Review Details</b>				
<b>Report Name</b>				
New Denver Heritage Values Report.pdf				
<b>General Report Description</b>				
Workshop held February 19, 2008 to identify key heritage resources for the Community Heritage Register. First step in integrating heritage conservation into community planning activities.				
<b>Principle</b>	<b>Notes</b>	<b>Score (1-10)</b>		
1 Observe and interact	Very good community input as to what they deem as important both historically and presently about the heritage of the community.	10		
2 Catch and store energy	The workshop was able to capture the importance of the history of the community. Ideas of self sufficiency, innovation, flexibility etc. all hint that Resilience is in the bones of this community.	10		
3 Obtain a yield	Identified what is important to community in terms of historic aesthetics. More emphasise could be placed on use of local resources and processing for the implementation of future building projects.	7		
4 Future generational equity	More emphasise could be placed on energy efficiency in building practices could ensure this. Nothing is mentioned in this regard.	1		
5 Use and value renewable resources	Again, more emphasise placed on local resources as a heritage value could be identified.	7		
6 Produce no waste	Not really addressed, however, the self sufficient past this would have come naturally.	5		
7 Design from pattern to details	This workshop maps out and identifies historical patterns and details	8		
8 Integrate not Segregate	The mapping done in this workshop is a great step to integrating the actions of a lot of diverse community groups.	8		
9 Use small and slow solutions				
10 Use and value diversity	The mapping done in this workshop is a great step to integrating the actions of a lot of diverse community groups.	8		
11 Use edges and value the marginal	The mapping done in this workshop is a great step to integrating the actions of a lot of diverse community groups.	8		
12 Creatively use and respond to change	The mapping done in this workshop is a great first step in this direction.	10		
		<b>Total Score</b>	82	
		<b>Weighted Average</b>	7.5	
		<b>Reviewed by</b>	Craig	
<b>Comments/Summary</b>				
This workshop really shows that resilience and self reliance are in the bones of the community. If heritage planning could provide guidelines to integrate development taking place by using local resources and knowledge (craftsman) then integration into the local economy and environment would be better served.				
<b>Overall Ethics Rating</b>				
<b>Environmental</b>	5	Identifies environment as important to residents, no actions		
<b>Social</b>	9	Good capture of community values		
<b>Cultural</b>	9	Good capture of community values		
<b>Economy</b>	5	Identifies economy as being important, but no actions to relocalize.		
<b>Comments</b>				
				

**Figure 5:**  
**Example of the Document Review Template**

### 3.3.3 Document Reviews, Scoring and Discussion

Once the reports were scored and detailed comments and notes made, the results were discussed and debated. This process allowed each reviewer to discuss their findings, and present facts that might have been missed by the others. The value of this approach was to capitalize on the interdisciplinary nature of the team. Engineers will look at problems differently than a planner, or an urban designer, and vice versa. This provided a more holistic review, and allowed each member to get a more thorough understanding of each document and its connection to the other documents and re-evaluate their original review, if necessary.

After deliberation, the total overall scores for both the New Denver Sustainability Principles, and the Permaculture Principles were then averaged between the three reviewers. This provided a basis upon which the documents could be ranked on how well they achieved both ND sustainability, and resilience.

### 3.4 List of Documents

The documents are listed here with the most resilient documents at the top of the list.

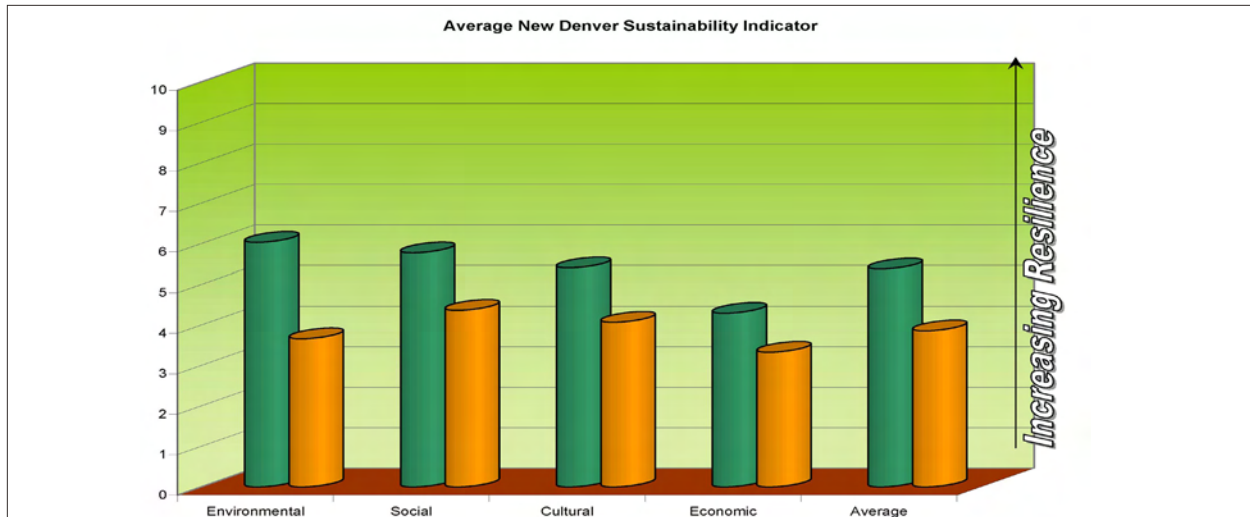


**Figure 6:**  
**List of Documents**

These scores are presented graphically and discussed further in the following section.

## 4.0 Assessment of Resilience in New Denver

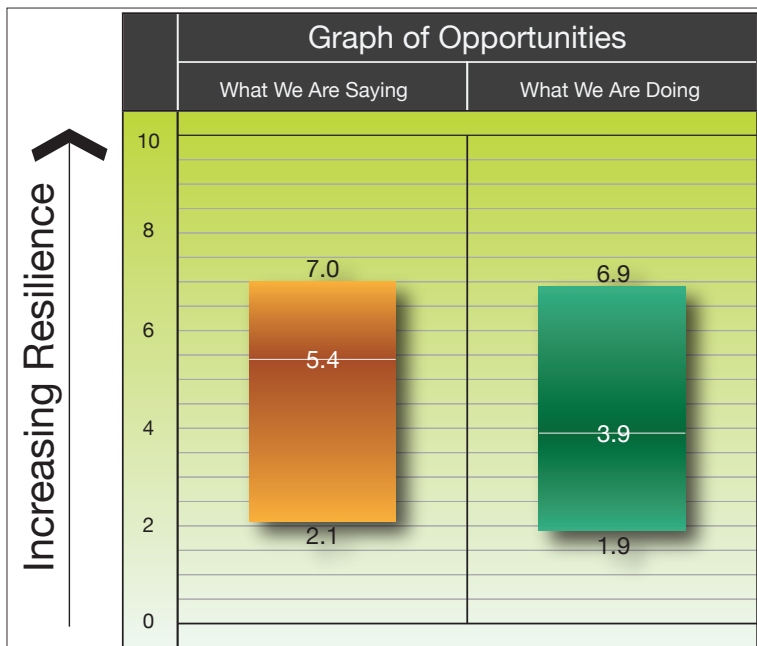
Below is a graph summarizing the findings of our document reviews. It illustrates the differences between what was being said (green) vs. what was being done (orange) (Figure 7). Appendix C contains a similar graph showing the differences between “saying” and “doing” for the permaculture scores.



**Figure 7:**  
Average New Denver Sustainability Indicator

### 4.1 What We Found - Opportunities

The following “Graph of Opportunities” (Figure 8) is our team’s approach to finding patterns in the numerical evaluation. It is a graphical way to see the gaps between the saying and the doing. Additionally it provides a graphic baseline of community resilience from which a solid plan forward can be built from.



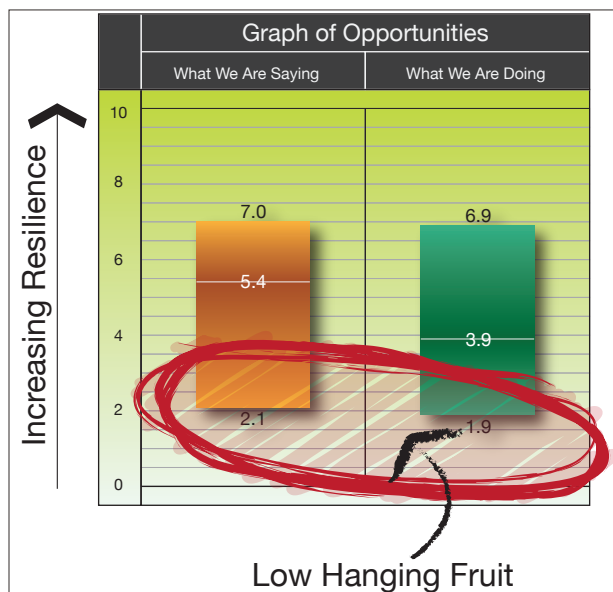
**Figure 8:**  
Graph of Opportunities

\*Note: Only the New Denver Sustainability Indicator results are shown here for clarity. See Appendix C for the Permaculture Indicators.





### 4.1.1 Low Hanging Fruits

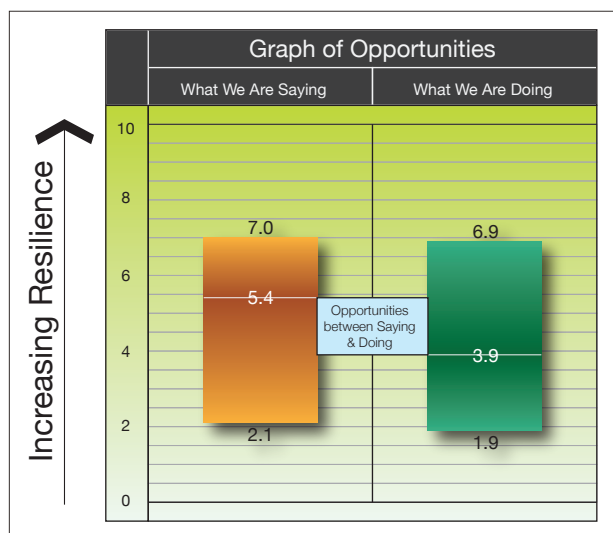


**Figure 9:**  
**Low Hanging Fruit**

Consider the low hanging fruits in Figure 9. The lower each bar is, the more opportunities are available to make effective changes. As resilience is built, the bars will move up and get shorter.

Ideally the scores would all be 10s so there is a lot of room for improvement. This should be observed as an opportunity rather than a shortcoming, as it is hard to know where to improve, without knowing where the gaps are. As New Denver moves closer and closer to 10s, they will begin to reap the benefits of being more self-sufficient, more local, and more resilient in the face of future uncertainty.

### 4.1.2 Gaps – Room for Change



**Figure 10:**  
**Gaps - Room for Change**

Consider the gap between the saying and doing in Figure 10. The greater this gap, the more opportunities there are to make effective changes. Likewise with the low hanging fruits, as resilience is built this gap will get smaller and migrate up. Looking at these relationships reveals the many positive changes that are happening and revealed some opportunities to make real changes to increase resilience.

The review tended to demand more of the Doing documents. While the Saying documents are important in identifying directives for the village, they are often non-binding. In order to increase resilience there needs to be implementation, incentive, and penalties. This is why typically, the implementation documents scored lower. The implementation documents also tended to be quite standard. While some of the planning documents were quite visionary.

## 4.2 Doing and Saying Well

The *Food Charter* and the *BC Climate Action* charter were the two highest rated “Doing” documents. We believe that both are visionary documents and strong commitments to village resilience. The village has already showed leadership in meeting the Climate Action charter commitments such as the current office upgrades.

We have found many ways to implement these charter concepts into the existing village bylaw structure and are discussed in the detailed bylaw reviews in Appendix C. It leads us to ask this question:

*Is New Denver ready to consider a paradigm shifting restructuring  
with food and energy bylaws being top priorities of the Village  
with all other bylaws being influenced by them?*

One of the strongest Saying documents that we reviewed was the Community Wildfire Protection Plan done in 2007. The recent village water tower upgrade is a great example of putting this study into action. By increasing the capacity of water storage the council is building town resilience, increasing fire protection and water available for drought or other emergencies.

#### 4.2.1 Opportunities New Denver is Missing

Some low hanging fruits that we identified were in the water, open burning and solid waste bylaws. Additionally, the zoning bylaw and building bylaw were two documents that have a great potential to demand better environmental, social, cultural, and economic performance. When viewed through the lenses of peak oil and climate change there are many chances to build greater adaptability. Solid waste, the Village Building Code and Education are discussed in further detail in the next section. See specific document reviews in Appendices A & B for complete details on each document.

### 4.3 Initial Recommendations Towards Resilience

#### 4.3.1 Solid Waste Management

Traditional measures to ensure sustainability do not necessarily address the energy constrained future before us. As an example examine the current construction practice of construction/demolition. Currently building material, after being torn down and destroyed by a backhoe it is trucked away to a landfill where it can be buried which causes methane emission problems. Alternatively, wood waste can get processed with high energy inputs to turn it into compost. While the composting option could be considered a sustainable measure, when examined against the high energy cost of the processing, it fails the test of resilience. A more resilient solution would be to recognize that by encouraging de-construction over demolition these materials could be saved from taking the trip to the dump and used to create both jobs (in the deconstruction and redistribution of materials) and supply a need for affordable building materials. This system by its design could utilize lower energy inputs using carpenters and apprentices instead of backhoes creating local work. The salvaged waste stream would provide a need for affordable building materials.

Examples of placing such emphasis and value on waste streams can be found in Holland where databases of deconstruction materials allow its reuse in its building industry. The Dutch have coined the term “Super Use” for this burgeoning industry.<sup>19</sup> The third world already practices heavily in this practice in terms of mining valuable materials and minerals coming out of electronic garbage and has been referred to as “Mining the Technosphere.”<sup>20</sup>

#### 4.3.2 New Denver Building Code and Bylaws

The comparison of green technology versus green design is another example of the important difference between sustainability and resilience. Consider the installation of an efficient furnace to heat a home in winter.

<sup>19</sup> Season 3 Episode 6 - Super Use - Podcast via iTunes - Website recyclicity.net (site closed) acted as a database to search for recycled materials from deconstructed buildings. Superuse.org highlights projects applying the principles.

<sup>20</sup> Rolf Widmer, David Rochat. 2009-06-27. Mining the Technosphere: A Solution for the Industrial Ecosystem. A presentation given to the Association for the Study of Peak Oil (APSO) Summit in Alcatraz, Italy.



While the more efficient heating system ensures better use of resources, resilience is built when the need for those resources is reduced through creative design. This can be achieved through encouraging and valuing passive solar designs, local material and labour use, higher standards of insulation and improved design. With the proper attention to design, the environment will benefit from less resource use, local economy could be supported through use of local materials and craftsmen. Cultural identity would be strongly linked to the place we live and buildings could be healthier through thoughtful selection of materials. Combining green technologies with green design can lead to more resilient solutions than what using either technique alone could do. Currently the New Denver Building Bylaw repeats much of what the BC Building code already requires. If proper changes were made we believe the New Denver Building Bylaw could be a resilient layer on top of the BC Building Code adding local value.

#### 4.3.3 Education

One of the biggest gaps apparent in our review is the connection of any documents to the importance of education. In terms of an effective use of renewable resources, education taps into the local cultural and social knowledge and passes things down. In the Transition Movement great importance is placed on what is called the Great Reskilling. Our understanding is that examples of this are afoot in the village such as UBC Students studying the creation of a learning/mentoring garden project. We suggest the education in all its forms be an important topic for public and council discussion in the next phases of this project.

## 5.0 Next Steps

The next step for this project includes presenting the findings of the report reviews to residents, staff of the Village of New Denver and council at a public meeting in early February 2010.

At the public meeting, we will present the theories and findings from this report. It will illustrate the future threats (peak oil, and climate change) and provide a decision-making matrix that residents can use to decide how to build resilience into their community, in what time frame they want to achieve these goals, and how it should be prioritized.

The consultants will use the CARD method to develop the principles that will drive the rest of this plan, and future action plans by the Village of New Denver. The CARD method ensure that all residents will be able to have equal input on how they wish the Village of New Denver to proceed with future planning decisions.

The findings from the public meeting in February will be summarized by the consultants and used to suggest future short-, medium-, and long-term action items the Village of New Denver should undertake.



## Appendix A - Document Reviews - What We're Saying

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1. Slocan Community Health Centre Development Concept
2. Mitigating the Impact of Stormwater Runoff
3. Asset Mapping Report
4. Community Wildfire Protection Plan
5. Tree Report
6. Denver Canyon Microhydro
7. New Denver Heritage Values Report
8. Healthy Housing Survey
9. New Denver CNK inventory
10. Well Head Protection Study
11. Community Energy and Emissions Inventory

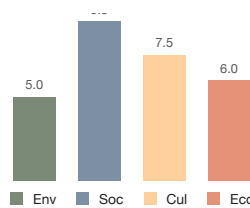
# Slocan Community Health Centre Development Concept

## Permaculture Indicators

## New Denver Sustainability Indicators

Weighted Average (10)

6.4



Average Sustainability Measure (10)

7.0

## Overall Assessment

### General Report Description

A report on what services a proposed community health centre would offer if built in New Denver. The proposal is for a long-term care facility, some recuperation beds for local residents, and some senior services (assisted living). A second part of the proposal suggests renovating the existing gym.

### Pros

- Excellent and thorough document of historic issues with providing health care in New Denver.
- Included public input as to what the area needs are.
- A good response to growing need for service in light of government cutbacks
- It recognizes the need for further health care facilities in the area and sites New Denver as a good spot to locate the limited services
- Allows residents to "Age in place" and receive treatment for minor illnesses/injuries without having to travel and builds in long-term sustainability. This reduces energy inputs for travel, but also increases health by reducing stress and allowing residents to receive treatment within the community among friends rather than being sent elsewhere.
- Is conscientious of what the demand for service is in the area and responds well by suggesting a small facility, rather than a large one which may not be financially sustainable
- Builds jobs and keeps money in the community rather than allocating it elsewhere
- Recognition of the value of a tranquil, natural setting for healing provides a low-cost solution and alternative method for healing

### Cons

- Could perhaps go further in integrating food gardens for health and wellbeing as part of the plan
- Energy efficiency and sustainable building practices are not mentioned for new or existing facilities.

## Directives from the Plan

- Not really suggested as it is a concept plan

## Where/How is this Being Implemented?

- 8 units of senior housing built by local contractor





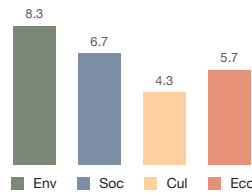
# Mitigating the Impact of Stormwater Runoff, 2004

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

7.9



Average Sustainability Measure (10)

6.3

## Overall Assessment

### General Report Description

The report consists of two engineering studies done in 2004 and 2007 by WSA Engineering on the importance of storm water runoff control measures to avoid negative impacts on the Village's two wells. The report identifies specific project goals to mitigate aquifer contamination.

#### Pros

- Studies the existing soil/hydrology to determine the best-fit solution in each area
- Pollutants and nutrients are 'processed' by natural means for free, rather than mechanical/chemical treatment
- Suggests continual maintenance and observation
- Suggests natural infiltration treatment where feasible and only suggests technical (engineering) solutions where it is necessary. Recognizing the value that natural systems have in cleaning and protecting our water is important. Also, recognizing where these systems are vulnerable and need help is equally important
- Suggests a variety of systems (infiltration trenches, oil-separating sewers, natural infiltration, etc.) rather than relying on one system to treat water. This builds in resilience and provides the most effective, efficient, and lowest-cost solution
- Achieves the goal of maintaining water quality and quantity in New Denver
- Indicates that biggest risk factor to lake well comes from uses associated with vehicles.

#### Cons

- Does not calculate long term cost/feasibility/life cycle of maintenance of engineered systems and the effect of relying on an oil-reliant technology (concrete
- Does not calculate monetary costs of decommissioning old wells or constructing new solutions
- Does not affect direct outflow into Slocan Lake (I CAN'T REMEMBER IF THIS WAS AN ACTUAL CONDITION - DIRECT FLOW INTO THE LAKE - IF NOT, THEN WE NEED TO REMOVE THIS COMMENT - WHAT DOES THIS HAVE TO DO WITH THE WELLS?)

## Directives from the Plan

- Decommission dry wells
- Clean existing swales
- Make improvements to 6th Ave street and along HWY
- Continue monitoring of aquifer

## Where/How is this Being Implemented?

- Need to consider developing a maintenance program to implement stormwater/water pumping improvements



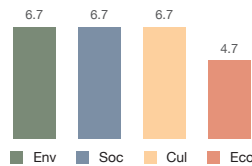
# Slocan Valley Community Asset Mapping

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

6.2



Average Sustainability Measure (10)

6.2

## Overall Assessment

### General Report Description

A report back to the community from the Slocan Valley asset mapping project.

#### Pros

- Very thorough indication of resources in the Slocan Valley
- This document is essentially a storage of valley resources
- Allows for the integration of resources
- The vision statements at the start of the document are great! they highlight that valley residents are already thinking sustainability
- The identification of gaps or missing resources at the end of the document provides good future direction
- Knowledge is one of the best renewable resources we have
- Used public meetings/public involvement to gather information

#### Cons

- Needs to be updated
- Could be more helpful/accessible if posted online somewhere - the document is hard to find
- Difficult to see where gaps are in specific areas (i.e. how are the needs of the elderly met in each community? Are some better served than others? Who loses out the most?)

## Directives from the Plan

- Mobilizing Assets - finding gathering places to discuss issues relating to:
  - Water
  - Food
  - Housing
  - Health
  - Learning Network, and
  - Forestry
- Filling in the Gaps from the "Needed List" in the following areas:
  - Arts, Heritage and Cultural
  - Business Assets Mobilization
  - Overall Social Planning Council

## Where/How is this Being Implemented?

- Not many know about this report
- Focuses more on the north valley



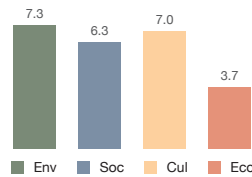
# Community Wildfire Protection Plan, 2007

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

7.6



Average Sustainability Measure (10)

6.1

## Overall Assessment

### General Report Description

Community Wildfire Protection Plan done by Blackwell and Associates in 2007. The document provides an overview of the current fire hazard risk and makes 36 recommendations for fuel management and future studies to reduce the risk of fire damage in the village. Some policy as well as implementation recommendations are made throughout the report.

#### Pros

- A thorough report with a good series of maps, with a well developed rationale for each recommendation
- Integrates waste reduction by addressing yard waste pickup by suggesting a composting program
- Addresses the means to pay, through either taxes or incentives
- Acknowledgement of different areas of the city (urban/rural fringe) and the need to focus thinning in these areas, rather than everywhere in the village. The suggested approach advocates a low-impact management strategy that allows for mostly natural landscaping with limited human management
- Provided a variety of management solutions, rather than focussing on a limited few. This made the report efficient in terms of labour, cost, and effectiveness
- Identifies that most fires are caused by human use and suggests the need for an education plan to address this
- The document highlights the importance of developing a resilient fire management and suppression (water) system

- Continue to train local firefighters to provincial standards
- Increase communication with surrounding communities and other government organizations
- Looks at protecting important infrastructure within the village (electrical lines) that can keep communication running during an emergency

#### Cons

- Identifies different fuel types, but doesn't clarify what they are and how the differences affect risk
- Does not address the role fire plays in the regeneration of forests. How will fire management affect forest health/regeneration (being asked by Parks Canada)? What is the correct management/regeneration technique?
- Fire suppression costs vs. fire management costs were not calculated. This calculation might illustrate the importance of fire management and speed up implementation
- No mention of how climate change will affect the risk of fire in the area

## Directives from the Plan

- Develop a fire education plan to reduce human-caused fires
- Begin managing/thinning the forest in the urban/rural fringe areas
- Well-head facilities should be evaluated as to their backup diesel fuel supply for pumps
- Identifies that FireSmart regulations are not addressed in the building or zoning bylaws
- Identifies the need for cooperation with Fortis and surrounding communities and organizations
- Identifies many small inexpensive solutions such as public communication through websites and signage

## Where/How is this Being Implemented?

- Community water tank upgraded
- Firesmart pamphlet issued
- Funding for thinning program, not granted - Village will continue to pursue further funding



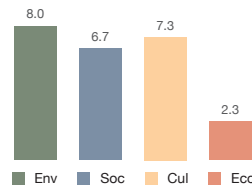
# Tree Management & View Maintenance Pruning Report, 2002

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

6.8



Average Sustainability Measure (10)

6.1

## Overall Assessment

### General Report Description

An assessment of tree health in New Denver. The report assesses the health of existing trees as well as the deteriorating pathway systems as a result of previous tree management. The report incorporates both professional recommendations, as well as resident feedback from their observations. The report also describes the removal of trees on main street and the need to re-plant recently removed trees. The report also suggests planting plans that maintain important viewsapes within the village.

### Pros

- A good example of residents and council working together.
- A good assessment of what the issues are, and the reasons behind the issues
- Suggests letting nature work in achieving goals (trimming of suckers rather than removal for slope stability)
- Maintaining viewsapes is great as it helps create special cultural places within the village that people will love and care for on their own
- Suggested a diversity of tree management techniques
- Suggests planting trees on 6th Ave to create character, clean the air and provide shade, and replace trees affected by disease
- Council and public are informed of program progress and plans and are open to input
- Use of retaining walls to prevent soil erosion

- Safety, views, shade, aesthetics, etc. as yields to be obtained from program. Objective of preserving beauty while balancing landscape uses and values
- Program has moved beyond old ways during which the forested area was used as a dumping ground by some and significant erosion potential. Tree planting and retention is put forward as an important future goal.
- New volunteer program is more integrated with the community.

### Cons

- There was nothing mentioned about what to do with the waste (trimmings)
- The report did not suggest which tree species were the most suitable/sustainable for replanting
- No tree planting strategy developed throughout the community
- Missed opportunity for increasing food security through selection of nut/fruit bearing trees

## Directives from the Plan

- Shrub pruning along the banks of the Mori Lakeside Trail
- Volunteer-based monitoring

## Where/How is this Being Implemented?

- Needs to be updated
- Tree replacement is good, but tree selection should include multi-function resilience like food-bearing trees
- No further direction has been undertaken



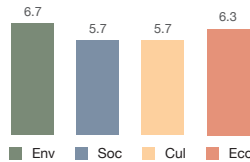
# Village of New Denver Micro Hydro Feasibility Study: Denver Canyon Power Project, 2002

## Permaculture Indicators

## New Denver Sustainability Indicators

Weighted Average (10)

6.7



Average Sustainability Measure (10)

6.1

## Overall Assessment

### General Report Description

This report, completed towards the end of 2002, is a feasibility report on developing a micro-hydro electric generating station on Carpenter Creek in Denver Canyon.

#### Pros

- Would provide local, clean power to the community
- Implied the system be community-owned
- Minimal waste/diversion of water
- This report suggests it is feasible to implement the micro hydro station
- Construction and maintenance of this facility would create local jobs/knowledge
- Provides a relatively low GHG source of power and income

#### Cons

- Flow data extrapolated from Lemon Creek and Slocan River.
- Only a 50 year lifespan. Is there a way to make it longer?
- No discussion of how climate change would affect future flow, leaving the future feasibility in doubt
- No indication as to how residents feel about this solution. Does community-owned make it better?
- No discussion of the environmental impact during construction – This wasn't in their scope
- Does not address the cumulative effects of many similar projects throughout the Slocan Valley.
- No mention of how the money from this project would be spent. Will it fund further green initiatives or be used for example to build roads, thereby negating any environmental gains from the micro hydro station?

## Directives from the Plan

- None really as it was a feasibility study

## Where/How is this Being Implemented?

- No implementation as it was a feasibility study.
- Slocan Lake Stewardship Society should be approached for volunteers to help implement a monitoring program
- Village should check the status of its water license

CRAIG WILL LOOK AT % OF ENERGY BUDGET



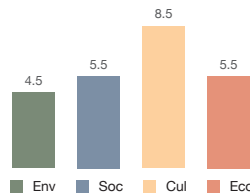
# New Denver Heritage Values Report, 2008

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

7.5



Average Sustainability Measure (10)

6.0

## Overall Assessment

### General Report Description

A report on the identification of important heritage values within the Village of New Denver, that identifies and distills the large group of values into principles. A comprehensive and well done plan on what people want to maintain of their heritage in town.

#### Pros

- The report involved a very well designed public process to gather feedback from residents. The workshop was able to capture the importance of the history of the community. Ideas of self sufficiency, innovation, flexibility etc. all hint that resilience is in the bones of this community
- The report helps focus future heritage endeavors
- Developed principles from public feedback and developed actions based on those principles shows transparency in the process and creates a logical process
- Preserving buildings adds life to the culture, and physical community structure and shows the value of maintaining buildings for long periods rather than the current 'demolish and rebuild' mentality
- Seeks to keep the buildings functional, rather than simply preserving them in a museum-like state adds further value to the building stock
- Adds tourism value
- The mapping done in this workshop is a great step to integrating the actions of a lot of diverse community groups

#### Cons

- Focussed only on 6th Ave buildings. What about other residential buildings that are important to the cultural history of New Denver? What about special landscapes or places that provide cultural value, like Carpenter Creek, the waterfront, or a really great viewpoint?
- Identified what is important to community in terms of historic aesthetics only.

## Directives from the Plan

- More emphasis could be placed on the use of local building materials, and local knowledge (craftsmen) to maintain these buildings and encourage new buildings with sustainable designs that are of a strong regional character, thereby developing heritage buildings of the future, rather than the traditional suburban house.

## Where/How is this Being Implemented?

- Applied for funding - not available at this time
- Village plans to proceed with heritage registry when funding permits



The Village of New Denver  
Sustainable Community Plan

Appendix A - 8

January 11th, 2010



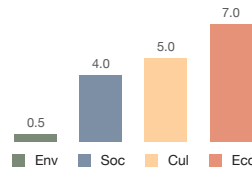
# Healthy Housing Survey

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

5.2



Average Sustainability Measure (10)

4.1

## Overall Assessment

### General Report Description

Results from a survey to residents about housing availability and resident's perception of how much housing is available and what the shortages/limitations of New Denver housing are.

#### Pros

- Good use of the public to gather perceptions about the availability of housing in New Denver
- Provides a base to move forward from
- It is about making a more inclusive society by providing housing options for different income levels
- The survey pointed out that there is a perceived issue of affordable housing in New Denver
- Identifies that there will be a problem with keeping or attracting a broad population demographic without unaffordable housing

#### Cons

- No mention about healthy housing as it relates to sustainable building practices (ie. non-toxic, sustainable materials), energy efficient houses for affordable operating costs of housing.
- Lacks actions
- A short report that is not fully developed
- Statistics not presented graphically. This would help crystallize the results.

## Directives from the Plan

- Suggests looking at a subsidy program for affordable housing in New Denver

## Where/How is this Being Implemented?

- No Record of follow up
- Need to implement green design as a means of keeping operating costs lower



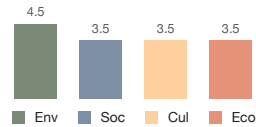
# New Denver CNK Inventory, 2008

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

6.8



Average Sustainability Measure (10)

3.8

## Overall Assessment

### General Report Description

Stats on gasoline and diesel usage and waste produced by village operations as well as a list of village-owned properties and square-footage in 2008.

#### Pros

- Collecting data to provide information on how much waste/gas is as a result of village operations provides a base from which to improve
- By keeping its own records the village will help to ensure its ability to confirm or deny outside inventories imposed on it by outside forces. Also will help in meeting commitments to Carbon Neutrality by 2012.

#### Cons

- Needs refining.
- Calculating waste in volume rather than tonnage is not an accurate measure
- No electricity/heat usage associated with village-owned properties, only square footage

## Directives from the Plan

- None

## Where/How is this Being Implemented?

- Are 2009 statistics being kept?
- The Village recognizes the need to use this data in future GHG management plans
- Ensure that data recording is continued for BC Climate Action Charter commitments and other GHG markets



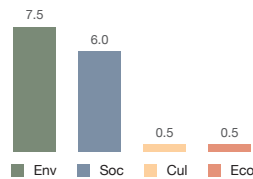
# Wellhead Protection Study, 1998

## Permaculture Indicators

## New Denver Sustainability Indicators

Weighted Average (10)

7.1



Average Sustainability Measure (10)

3.6

## Overall Assessment

### General Report Description

Aquifer susceptibility to pollution based on surrounding uses and sewage disposal.

#### Pros

- Good technical assessment of soil, drainage rates, etc.
- States the risk future development poses to aquifer health
- Recognizes the value of clean water and a healthy aquifer
- Suggests continual monitoring

#### Cons

- Costs of preventing contamination vs. cost of remediating wells could have been stressed more

## Directives from the Plan

- Monitoring

## Where/How is this Being Implemented?

- Formed the basis for the Mitigating Stormwater Runoff Plan, 2004
- Study shows that the biggest base-contaminant risk to the lake well is runoff from the highway



# Community Energy and Emissions Report, 2007

Permaculture Indicators

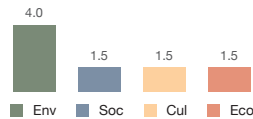
New Denver Sustainability Indicators

Weighted Average (10)

3.0

Average Sustainability Measure (10)

2.1



## Overall Assessment

### General Report Description

Community Energy and Greenhouse Gas Emissions report for 2007. Quantifies total energy and greenhouse gas emissions for the area in the following areas: solid waste, building electrical usage and transportation.

#### Pros

- Good observations - Illustrates clearly how much energy and emissions are being produced in the Postal Code area.
- Important first step in providing metrics for judging future progress in improving and reduce energy use and emissions.

#### Cons

- The report is done on a Postal Code basis, which means that it applies to more than just the village boundaries.
- The study does not compare to national, provincial and other municipalities so there's no gauge to measure how well New Denver is doing. Targets would be an important addition
- The methodology behind HYL's results is not readily available to the reader or on their website therefore verifying results to some international standard (ie. ISO 14064) is difficult.
- Refinement of this reporting method is needed.

## Directives from the Plan

- None Suggested

## Where/How is this Being Implemented?

- No record of implementation/follow up



## Appendix B - Document Reviews - What We're Doing

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1. BC Climate Action Charter
2. New Denver Food Charter
3. New Denver OCP Bylaw 611, 2007
4. New Denver Building Design Guidelines
5. Bylaw No. 516, 1999 - Animal Control
6. Bylaw No. 595, 2006 - Building Bylaw
7. New Denver Zoning Bylaw 612, 2007
8. Bylaw No. 581, 2004 - Solid Waste
9. Bylaw No. 591, 2005 - Open Burning
10. Bylaw No. 597, 2004 - Water Regulations

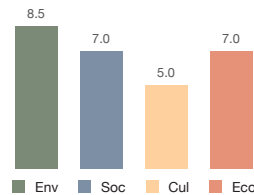
# British Columbia Climate Action Charter

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

7.0



Average Sustainability Measure (10)

6.9

## Overall Assessment

### General Report Description

A non-binding agreement between the Government of British Columbia and the Union of BC Municipalities to develop plans and programs in an attempt to curb climate change.

#### Pros

- A very strongly worded document that addresses the urgency of reducing GHG emissions. By virtue of this, it addresses the urgency to reduce fossil fuel usage
- Recognizes the need for local action
- Strong emphasis on efficiency, localization, integration with others
- Developing local solutions is about storing energy
- Stressing importance of health of environment, individuals, families and communities
- Clear goal of being climate neutral by 2012
- Mentioned using local sources of renewable energy
- Integrating both levels of government
- Presented a variety of different solutions/directions rather than focussing on a single solution
- A very good forward-looking, clear document with realistic and defined goals
- Provides a checklist of completed, in process and future plans

#### Cons

- Not legally binding
- Focussed on carbon neutrality, but did not attempt to push beyond and become carbon negative
- Specifically excludes municipal waste operations
- More responsibility placed on municipality
- No Energy Use Charter - would be more effective as an energy use charter with GHGs acting as a filter on energy choice

## Gaps Identified from the Document

- New Denver needs to assess which plans it has completed, which are in progress, and what future plans are in order to keep up to date, and be informed on their progress towards the 2012 goals.
- New Denver has made a strong commitment in signing on to the charter. Although it was disappointing to see that the last clause states that the entire document is not legally binding there are political sticks and carrots for municipalities showing support for their commitments.
- GHG targets MUST in OCP in 2010





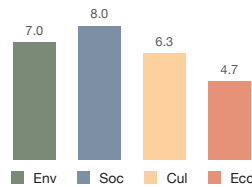
# The Corporation of the Village of New Denver Food Charter

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

6.8



Average Sustainability Measure (10)

6.5

## Overall Assessment

### General Report Description

A recognition by the Village of New Denver that food security contributes to the health and well being of residents.

#### Pros

- A very progressive document in that it recognizes the right that everyone has to be fed
- Actions resulting from this charter would provide significant benefits to the community, and essentially builds resilience right into the culture of the community. I disagree as living soil is not stressed as a prime directive, it could also go further to stress relocalization
- Addresses the need for support from other levels of government
- Suggests integrating food systems through various partners
- Indirectly promotes a local knowledge of food production
- The recognition that clean water plays a vital role in achieving this

#### Cons

- Does not stress living soil protection and enhancement as a prime directive of the plan to relocalize food production
- Lacks implementation strategies or action statements
- Could have emphasized the need to limit external inputs for food production (ie. fossil fuel based fertilizers) for local AND organic food

## Gaps Identified from the Document

- After reviewing the OCP and bylaws there is very little implementation in this area. Integrating this idea into the OCP, animal control bylaw, and the zoning bylaw would provide the implementation tools needed to achieve food security in New Denver.
- Need to find ways to incorporate this into different village bylaws
- The need for education and a means to share local knowledge would be a good step towards this goal as well
- No information on UBC Students work in:
  - Building a reskilling garden
  - Garbage to gardens project
  - Completed an inventory of agricultural resources
  - Implemented a fruit tree program for excess fruit



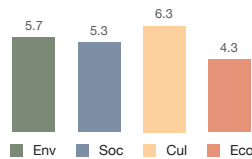
# New Denver Official Community Plan, Bylaw 611, 2007

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

4.9



Average Sustainability Measure (10)

5.4

## Overall Assessment

### General Report Description

New Denver OCP from 2007 that directs future planning directives for the Village.

#### Pros

- The five vision elements were addressed throughout the document, though some were more developed than others
- The document mentioned balancing residents needs with cost, so economic elements were considered
- The document sought to maintain a regional character by keeping things to a good scale (i.e. no 3-storey buildings)

#### Cons

- There was no sense of what New Denver would be like in the future (population, economy, etc.). Will there be an increased population? If so, how will it be done through increased density rather than expansion. These all affect the land use map and spatial planning. Considering more multi-family or mixed use areas (especially along the highway) would help provide a solid vision of what New Denver will look like in the future.
- “Green Technologies” were mentioned but the document misses the most important element for resilience which is Green Design. While having efficient furnaces and lightbulbs are great, not needing to use those furnaces and lightbulbs is better and are addressed through Green Design, rather than Green Technologies
- The document did not emphasize localization which would provide resilience, and reduce energy for material transportation needs, as well as developing a local sense of place, and a local knowledge base.
- There was little if anything on air quality, waste reduction, soil protection, etc.
- Did not advocate more mixed use, which could help to address affordability issues
- Failing to mention aging in place and youth education/recreation opportunities was a missed opportunity to build in social stability and sustainability

## Gaps Identified from the Document

- OCP is a visioning document, but lacks any strong implementation



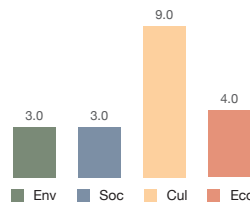
# New Denver Building Design Guidelines, 2007

## Permaculture Indicators

## New Denver Sustainability Indicators

Weighted Average (10)

4.3



Average Sustainability Measure (10)

4.8

## Overall Assessment

### General Report Description

The report is Schedule E from the Official Community Plan, and enforced under bylaw 611. The report outlines Building Design Guidelines for Commercial Development in New Denver. Graphic presentation of acceptable types based on historic forms.

### Pros

- Good observations of the existing building forms and styles (awnings, cornices, building massing, lot placement, etc.) Using the existing building form to inform future development is critical in developing a commercial area that is sympathetic to existing character
- Maintains the character of New Denver for future generations as architecture plays a large part in how people identify with and appreciate their communities

### Cons

- No development of guidelines that incorporate increased environmental performance (i.e. increased southern solar exposure) as a guideline for future development
- Missed the opportunity to address sustainable building technologies and techniques as well as using local products (locally-sourced lumber, local rock masonry, etc.)
- Suggests a style that looks like it is from 100 years ago, but should have provided more modern examples to suggest new building that will fit in with existing buildings rather than developing a “themed village core” (Edinburgh, UK does a good job of building new modern buildings that fit in with the 500+ year old building stock it has without looking out of place)
- This only applies to Development Permit Area 1. What about the other areas in New Denver? Are they ready for unsympathetic development?
- There is nothing that addresses waste associated with these projects (deconstruction vs. demolition, etc.)
- It could look at not only the end product, but develop a regional character by considering the design/construction process, using local materials and local craftsmen for construction to build in resilience

## Gaps Identified from the Document

- Doesn't cover entire village, only Development Permit Area 1
- Missed opportunity by not including green building design guidelines



# Bylaw No. 516, 1999 - Animal Control, & Bylaw No. 598, 2006 - Animal Control Bylaw Amendment

## Permaculture Indicators

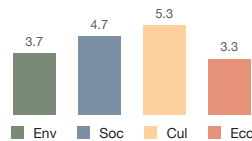
## New Denver Sustainability Indicators

Weighted Average (10)

3.7

Average Sustainability  
Measure (10)

4.3



## Overall Assessment

### General Report Description

This Bylaw regulates the housing of wild and domestic animals within the Village of New Denver, with a particular focus on regulating dogs. This document also covers enforcement and penalties.

#### Pros

- A thorough regulating bylaw
- Some allowance for chickens and other domestic farm animals for food provides food security and reduces the footprint of food miles traveled, and reduces the waste stream in terms of packaging
- Does not completely restrict traditional food production uses (allows chickens, etc.)
- Quite clear about the regulation of dogs and most animals

#### Cons

- There is no relation to lot size, distance between neighbours and the regulation of farm animals (i.e. how many chickens can be supported on different lot sizes? Why only 12 allowed? Why not more? or less? What was the rationale?)
- Perhaps more thought should be given to the allowance of sheep or goats under certain circumstances. The many benefits of these animals for vegetation control, fibre and food could be considered as a step towards self reliance.

## Gaps Identified from the Document

- Revising the bylaw to consider allowing more variety and number of domestic farm animals could help strengthen resilience by strengthening food security for individuals and the community
- Consider waste products (manure) as a possible resource rather than a waste product
- Suggest UBC Student project could include evaluating the carrying capacity of certain animals for agricultural capacity



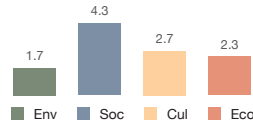
# Bylaw No. 595, 2006 - Building Bylaw

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

2.1



Average Sustainability Measure (10)

2.8

## Overall Assessment

### General Report Description

The Building Bylaw highlights the regulations, approvals and penalties associated with new building construction in New Denver.

#### Pros

- Ensures that all new construction is built to a high standard (BC Building Code) and ensures that the buildings will last as long as they're intended to
- Provides climatic information (regional snow load, wind patterns, etc.) which can be used to design more environmentally friendly structures
- Based on previous/existing regulations so there is no guessing as to how successful/durable new construction will be
- No permit fees for greenhouses

#### Cons

- Does not go beyond the status quo to address the consequences of peak oil/energy and climate change by encouraging sustainable and localized building practices

## Gaps Identified from the Document

- This is essentially a duplicate of the BC Building Code
  - Could have been much more progressive in green design, and focusing on local skills/vernacular
- Could promote the construction of buildings that achieve higher environmental performance (insulation, straw-bale, low energy use, passivhaus, etc.) that uses the climatic information provided more effectively
- There is no incentive over deconstruction and re-use vs. demolition and landfilling. There could be incentives built into houses built that are easily deconstructed and reusable over those that are simply torn down and landfilled at the end of their life cycle.
- Could focus on using local materials (wood, stone, etc.) to reduce the carbon footprint and build a local market for housing supplies that builds in resilience.
- Nothing to address healthy housing needs of community.



# Bylaw No. 612, 2007 - Zoning Bylaw

Permaculture Indicators

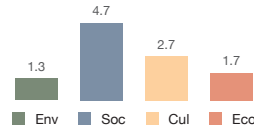
New Denver Sustainability Indicators

Weighted Average (10)

1.9

Average Sustainability Measure (10)

2.6



## Overall Assessment

### General Report Description

New Denver Zoning Bylaw 612 developed in 2007.

#### Pros

- Strong Regulations in each zone
- Standard zoning document, nothing really new that residents/staff/developers will not understand

#### Cons

- Not clear whether existing development informed zoning regulations (setbacks, height, etc.) or whether these regulations were from somewhere else
- No regulations on heat, water, or energy conservation/protection
- Zoning map should differentiate between commercial areas on 6th Ave and commercial areas on HWY as those are quite different WHY, ARE YOU SUGGESTING THEY NEED A NEW ZONE?
- No implementation of green building/green design regulations
- Nothing on landscaping, which would address water use and protection from pesticide use
- A large portion of the document is spent on parking... more than residential or commercial. Too big of a focus on parking (ie. cars not people)
- Nothing to allow additional buildings (ie. granny suites in yards) for increased housing options

## Gaps Identified from the Document

- Does not implement what the OCP and other planning documents advocated (heritage, green design, food security, firesmart, etc.) How can these elements be integrated/enforced?
- Fairly standard zoning document - lacks innovation
- Need to integrate new standards when OCP and ZBL is reviewed in 2010
- No ancillary suites because of septic restrictions - barrier to affordable housing
- Village should support greywater use



# Bylaw No. 581, 2004 - Solid Waste, & Bylaw No. 621, 2007 - Solid Waste Amendment

Permaculture Indicators

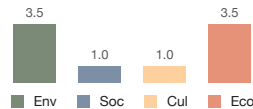
New Denver Sustainability Indicators

Weighted Average (10)

4.4

Average Sustainability  
Measure (10)

2.3



## Overall Assessment

### General Report Description

This bylaw regulates solid waste, pickup, acceptable solid waste items, and enforcement

#### Pros

- Limiting solid waste to one can per household per pickup is a good initiative to curb excess waste. Charging for going over the limit is also a way to recover costs.
- Considers the implementation of a recycling program in the future - forward looking
- Twice yearly Arbor Day free pickup of yard waste
  - Brush chipped and used
  - Leaves composted

#### Cons

- End-of-stream regulations, but nothing that addresses reducing packaging at the initial source
- In terms of an energy constrained future, the limitations of the current waste transfer system are not addressed - status quo
- Arbor Day pickup - some yard waste ends up in landfill

## Gaps Identified from the Document

- No consequences for the disposal of acceptable recycled materials.
- No mention of what is done with yard waste - Could consider using yard waste for compost or trail surface material rather than burning or sending to landfill
- In an energy constrained future, re-use of the old landfill site may become necessary in the future





# Bylaw No. 591, 2005 - Open Burning

Permaculture Indicators

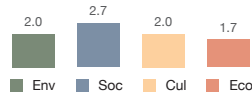
New Denver Sustainability Indicators

Weighted Average (10)

1.5

Average Sustainability Measure (10)

2.1



## Overall Assessment

### General Report Description

Bylaw regulations for open burning of materials on private property.

#### Pros

- Thorough regulation on what can and cannot be burned
- Set out burning regulations in the spring and fall, eliminating burning during high fire hazard months in the summer
- Cheaper than landfilling it

#### Cons

- Does not value alternative uses for yard waste as compost or trail surfacing material
- Category 4 fire is demolition materials, which are bound to have harmful chemicals in it which are released into the atmosphere when burned
- Air Pollution/particulates released by burning
- Does not list fire pit design regulations

## Gaps Identified from the Document

- Should encourage composting and recycling before burning.
- Fails to recognize the production of airborne pollutants, and the waste of heat/materials by burning them
- Category 4 fire could potentially release harmful chemicals into the air/soil by burning household demolitions
- Could provide BC Firesmart Regulations/Information
- Arbor Day Pickup - some composted & re-used while others are landfilled



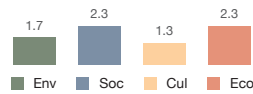
# Bylaw No. 579 - Water Regulations

Permaculture Indicators

New Denver Sustainability Indicators

Weighted Average (10)

2.0



Average Sustainability Measure (10)

1.9

## Overall Assessment

### General Report Description

This bylaw defines different water related uses and penalties and regulates water use and covers enforcement of violations

#### Pros

- Obtaining a yield by outlining how the Village will be paid for supply of water
- Ability to regulate use during periods of drought (shut off supply to violators)
- Well developed regulations for proper water system hookups
- Village has different levels of restrictions to regulate water use
- Rain Barrel program is subsidized

#### Cons

- Few water meters misses opportunities to encourage water conservation.
- Missed opportunity to encourage conservation by installation of efficient appliances (ie. low flush toilets)
- Not clear on how water rights work - who gets their water shut off first during a drought
- Bylaw lacks consideration of drought conditions, but the Village does have tools to regulate water use
- Water Regulation Tools not included in the bylaw

## Gaps Identified from the Document

- No mention of water storage regulations (rainwater storage, etc.)
- A more holistic bylaw including disposal may be more effective
- No idea about acceptable use - what is the carrying capacity of the water system
- Metering on pumps and reservoirs provides a low cost solution while providing indicators on system efficiency
- Village should support of greywater use could allow for more density





## Appendix C - Document Reviews - Summary of Score and Findings

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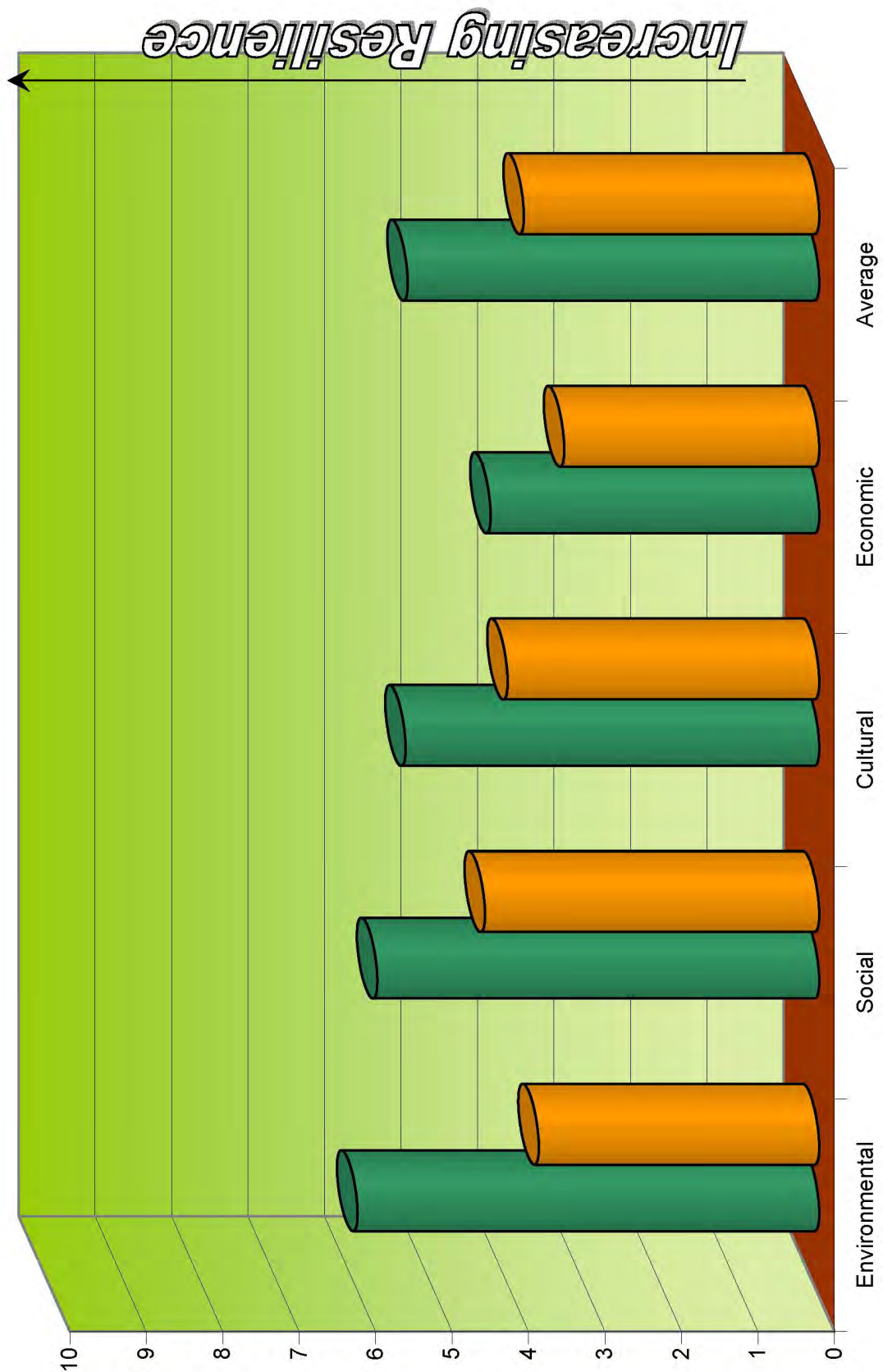
1. Table of Scores
2. Graph of Average New Denver Sustainability Indicator Scores
3. Average of Permaculture Scores by Principle
4. Graph of Opportunities - New Denver Sustainability Indicators
5. Graph of Opportunities - Permaculture Principles Scores

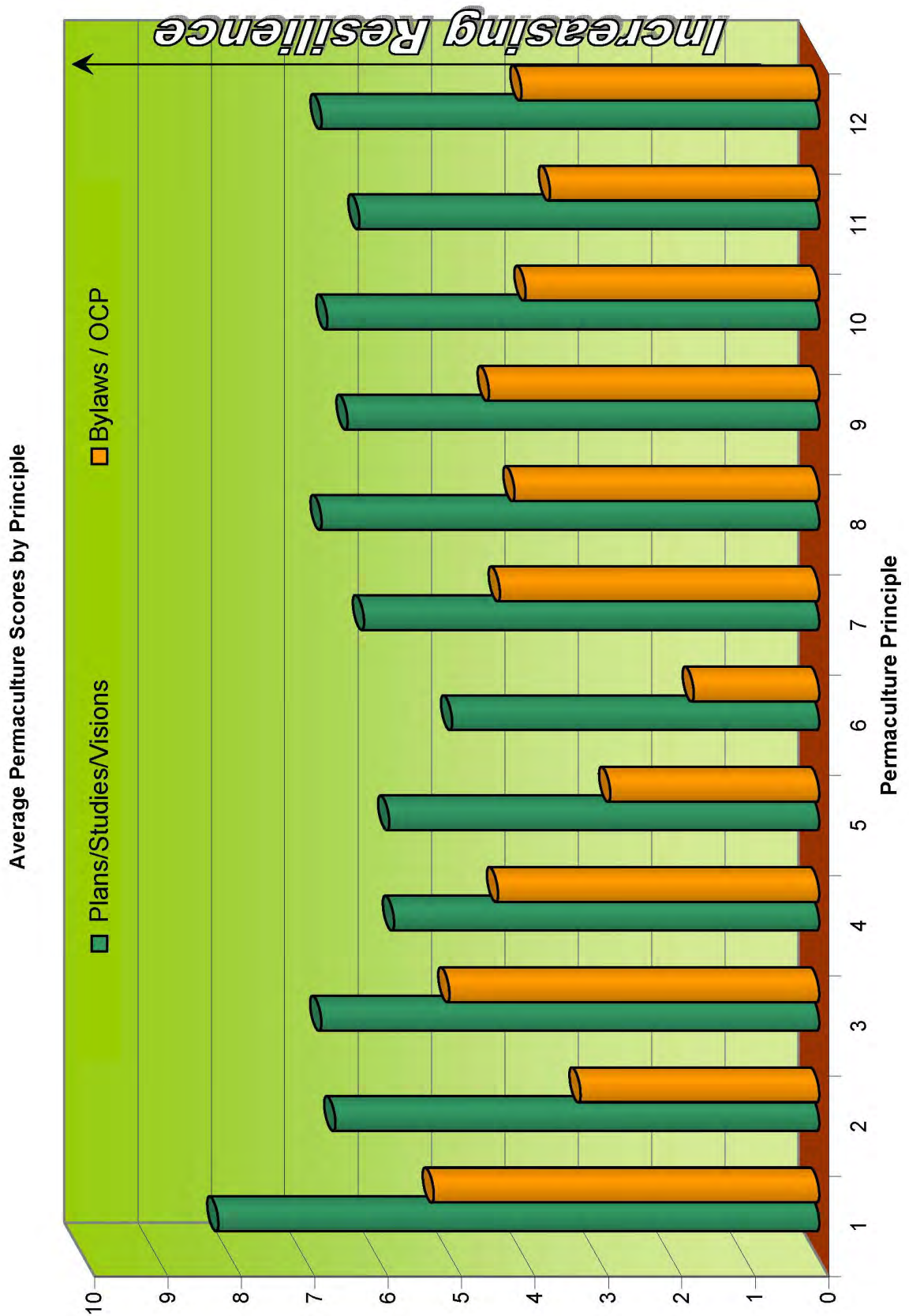
Document Review Raw Score Data																						
Report No	Name	Who	Permaculture Principles												Avg	Ethics						
			1	2	3	4	5	6	7	8	9	10	11	12		Env	Soc	Cul	Eco	Avg		
WHAT WE ARE SAYING - STUDIES / PLANS / VISIONS																						
1	Asset Mapping Report - Final	CRS	6.0	6.0	n/a	n/a	n/a	n/a	n/a	6.0	n/a	6.0	6.0	6.0	36.0	6.0	6.0	6.0	6.0			
		FJB	6.0	6.0	7.0	6.0	9.0	n/a	7.0	n/a	8.0	n/a	9.0	6.0	61.0	7.6	8.0	8.0	2.0	6.5		
		CJS	6.0	5.0	4.0	5.0	7.0	n/a	4.0	4.0	6.0	4.0	n/a	n/a	49.0	4.9	6.0	6.0	6.0	6.0		
		AVG	7.0	5.7	5.5	5.5	8.0	n/a	4.0	5.7	4.0	6.7	5.0	7.5	48.7	6.2	6.7	6.7	4.7	6.2		
		Check	6.1	5.9	-	-	-	-	-	-	-	-	-	-	61.5	5.9	-	-	-	-		
2	Community Energy and Emissions Inventory 2007	CRS	5.0	3.0	5.0	3.0	3.0	n/a	n/a	5.0	n/a	n/a	n/a	27.0	3.9	2.0	2.0	2.0	2.8			
		FJB	8.0	1.0	1.0	1.0	1.0	2.0	1.0	6.0	1.0	1.0	1.0	1.0	25.0	2.1	1.0	1.0	1.0	1.5		
		CJS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		AVG	6.5	2.0	3.0	2.0	2.5	1.0	6.0	3.0	1.0	1.0	1.0	1.0	26.0	3.0	1.5	1.5	1.5	2.1		
		Check	3.0	2.6	-	-	-	-	-	-	-	-	-	-	31.0	2.6	-	-	-	-		
3	Community Wildlife Protection Plan	CRS	8.0	5.0	10.0	10.0	n/a	n/a	10.0	10.0	10.0	10.0	10.0	92.0	9.2	8.0	8.0	3.0	6.8			
		FJB	10.0	8.0	8.0	5.0	8.0	10.0	5.0	8.0	8.0	5.0	10.0	93.0	7.7	8.0	3.0	5.0	4.8			
		CJS	7.0	7.0	7.0	5.0	6.0	8.0	7.0	5.0	5.0	3.0	5.0	70.0	5.8	8.0	8.0	5.0	6.8			
		AVG	8.3	6.7	8.3	6.7	6.5	8.0	7.7	8.3	7.7	5.0	6.7	81.7	7.6	7.3	7.0	3.7	6.1			
		Check	86.2	7.3	-	-	-	-	-	-	-	-	-	-	86.2	7.3	-	-	-	-		
4	Denver Canyon Microhydro.pdf	CRS	8.0	7.0	9.0	2.0	3.0	7.0	3.0	8.0	4.0	7.0	5.0	7.0	70.0	5.8	6.0	6.0	7.0	6.5		
		FJB	8.0	10.0	8.0	5.0	9.0	9.0	n/a	n/a	9.0	8.0	9.0	9.0	83.0	8.3	7.0	5.0	5.0	5.5		
		CJS	5.0	9.0	8.0	6.0	9.0	6.0	4.0	5.0	6.0	6.0	4.0	4.0	72.0	6.0	6.0	6.0	7.0	6.3		
		AVG	7.0	8.7	8.3	4.3	7.0	7.3	3.5	6.5	6.3	7.0	5.7	6.7	75.0	6.7	5.7	6.3	6.1			
		Check	78.3	6.5	-	-	-	-	-	-	-	-	-	-	78.3	6.5	-	-	-	-		
5	Slocan Community Health Centre Development Concept.pdf	CRS	9.0	8.0	8.0	8.0	0.0	n/a	8.0	8.0	8.0	8.0	8.0	8.0	81.0	7.4	5.0	8.0	7.0	7.5		
		FJB	5.0	4.0	4.0	7.0	1.0	1.0	n/a	8.0	8.0	8.0	7.0	7.0	60.0	5.5	5.0	7.0	5.0	6.5		
		CJS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		AVG	7.0	6.0	6.0	7.5	0.5	1.0	8.0	8.0	8.0	7.5	7.5	7.5	70.5	6.4	5.0	7.5	6.0	7.0		
		Check	75.0	6.3	-	-	-	-	-	-	-	-	-	-	75.0	6.3	-	-	-	-		
6	Healthy Housing Survey	CRS	9.0	10.0	6.0	6.0	0.0	6.0	6.0	8.5	n/a	n/a	n/a	51.5	5.7	0.0	3.0	8.0	4.8			
		FJB	8.0	n/a	n/a	8.0	n/a	n/a	n/a	8.0	2.0	5.0	5.0	1.0	33.0	4.7	5.0	2.0	8.0	3.5		
		CJS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		AVG	8.5	10.0	6.0	6.0	0.0	6.0	6.0	6.0	5.3	5.0	5.0	1.0	42.3	5.2	4.0	5.0	7.0	4.1		
		Check	52.3	4.9	-	-	-	-	-	-	-	-	-	-	52.3	4.9	-	-	-	-		
7	Mitigating the Impact of Stormwater Runoff 2004	CRS	10.0	9.0	8.0	7.0	8.0	n/a	9.0	10.0	8.0	8.0	n/a	86.0	8.6	8.0	3.0	7.0	6.5			
		FJB	10.0	7.0	7.0	7.0	7.0	8.0	9.0	8.0	8.0	9.0	6.0	75.0	7.5	7.0	5.0	5.0	6.5			
		CJS	9.0	8.0	8.0	8.0	8.0	7.0	7.0	n/a	7.0	6.0	7.0	n/a	75.0	7.5	6.0	5.0	5.0	5.8		
		AVG	9.7	8.0	7.7	7.3	7.7	7.0	8.0	9.0	8.3	7.3	7.5	6.0	73.7	7.9	6.7	4.3	5.7	6.3		
		Check	83.3	6.7	4.3	5.7	6.3	-	-	-	-	-	-	-	83.3	6.7	-	-	-	-		
8	New Denver CNK Inventory	CRS	7.0	n/a	4.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	9.5	6.8	6.0	6.0	6.0	6.0		
		FJB	8.0	n/a	4.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	10.0	5.5	1.0	1.0	1.0	1.5		
		CJS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		AVG	7.5	n/a	4.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	9.5	6.8	4.5	3.5	3.5	3.8		
		Check	38	-	-	-	-	-	-	-	-	-	-	-	38	-	-	-	-	-		
9	New Denver Heritage Values Report.pdf	CRS	10.0	10.0	7.0	1.0	7.0	5.0	8.0	8.0	8.0	8.0	10.0	81.5	5.8	9.0	9.0	5.0	7.0			
		FJB	10.0	n/a	8.0	8.0	8.0	n/a	8.0	7.0	6.0	7.0	8.0	6.0	68.0	7.6	4.0	2.0	8.0	6.0	5.0	
		CJS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		AVG	10.0	10.0	7.5	4.5	7.0	6.5	8.0	7.5	6.0	7.5	8.0	8.0	75.0	7.5	4.5	5.5	5.5	6.0		
		Check	90.5	7.5	-	-	-	-	-	-	-	-	-	-	90.5	7.5	-	-	-	-		
10	Tree Report 2002.pdf	CRS	9.0	9.0	9.0	8.0	8.0	7.0	8.0	7.0	8.0	8.0	8.0	89.0	8.1	9.0	8.0	5.0	7.3			
		FJB	10.0	8.0	8.0	8.0	4.0	n/a	5.0	6.0	7.0	9.0	9.0	80.0	7.3	6.0	7.0	2.0	5.8			
		CJS	8.0	4.0	6.0	5.0	1.0	4.0	4.0	6.0	7.0	5.0	6.0	61.0	5.1	7.0	7.0	0.0	5.3			
		AVG	9.0	7.0	7.7	6.3	7.0	4.0	6.0	4.5	6.3	8.0	8.7	7.7	76.7	6.8	8.0	6.7	2.3	6.1		
		Check	80.2	6.7	-	-	-	-	-	-	-	-	-	-	80.2	6.7	-	-	-	-		
11	Well Head Protection Study 1998.pdf	CRS	9.0	n/a	n/a	8.0	9.0	n/a	n/a	n/a	n/a	n/a	n/a	26.0	8.7	7.0	0.0	0.0	4.0			
		FJB	10.0	1.0	6.0	6.0	8.0	2.0	n/a	n/a	n/a	n/a	n/a	33.0	3.3	5.0	1.0	1.0	3.3			
		CJS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		AVG	9.5	n/a	6.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	29.5	7.1	6.0	0.5	0.5	3.6		
		Check	15.5	7.8	-	-	-	-	-	-	-	-	-	-	15.5	7.8	-	-	-	-		
OVERALL - SAYING			Permaculture Principle												Ethics							
			1	2	3	4	5	6	7	8	9	10	11	12	Avg			Env	Soc	Cul	Eco	Avg
			8.2	6.6	6.8	5.8	5.9	5.0	6.2	6.8	6.4	6.7	6.3	6.8	6.6			6.0	5.8	5.4	4.3	5.4
															Maximum			8.3	9.5	8.5	7.0	7.0
															Minimum			3.0	1.5	0.5	0.5	2.1





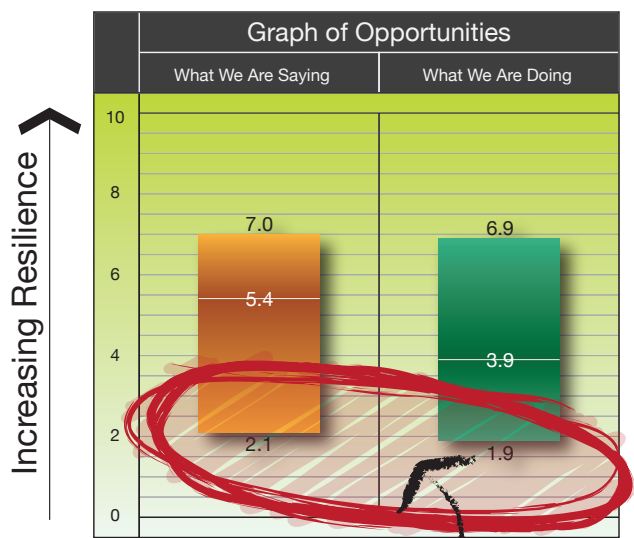
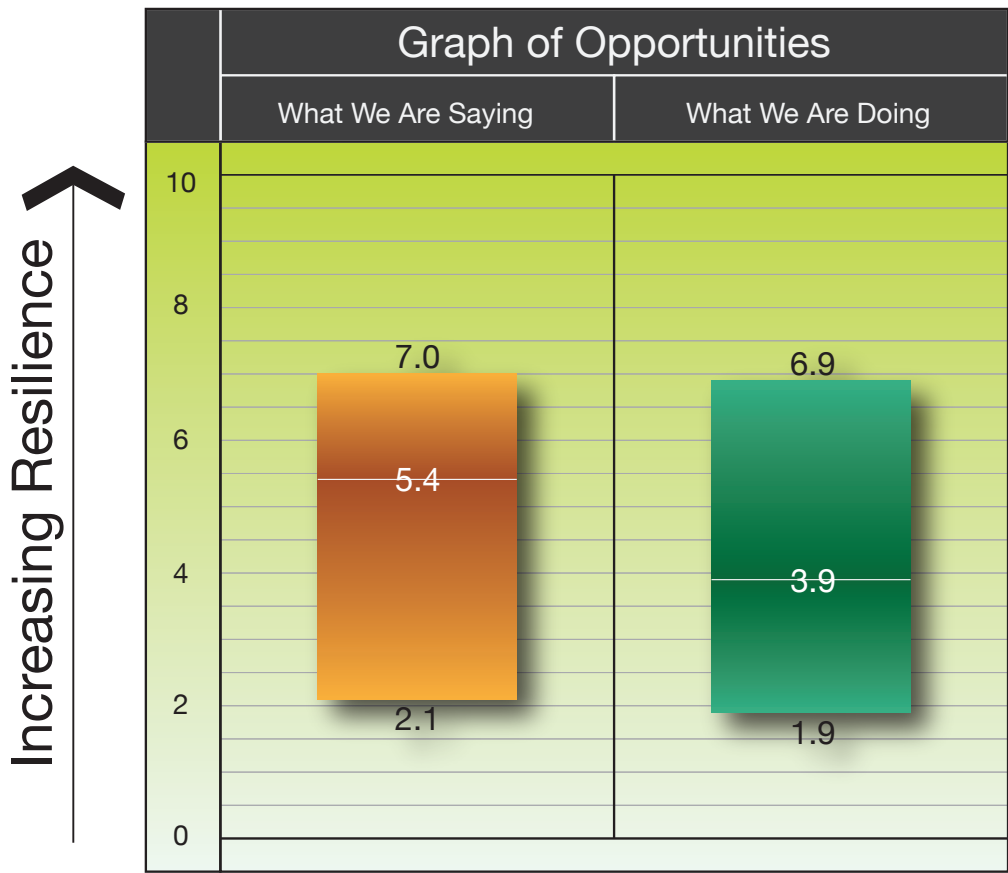
Average New Denver Sustainability Indicator



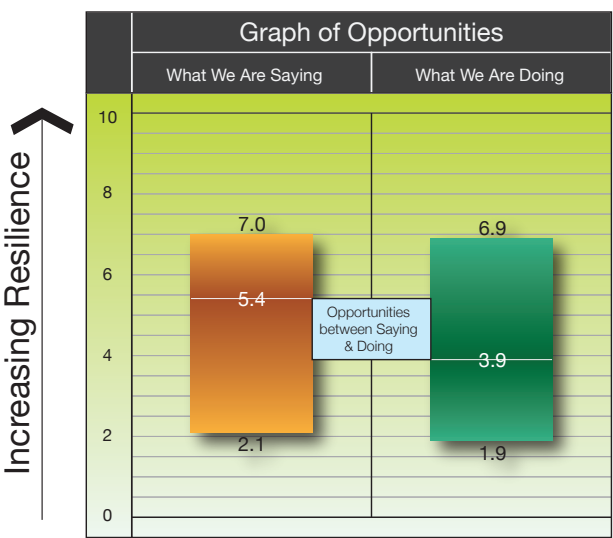




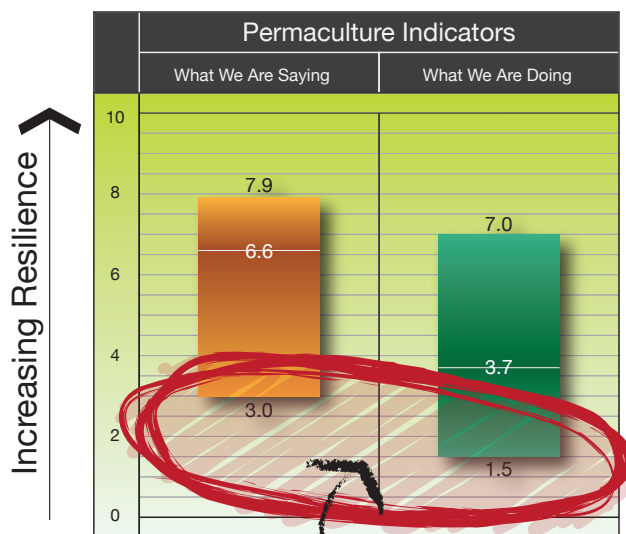
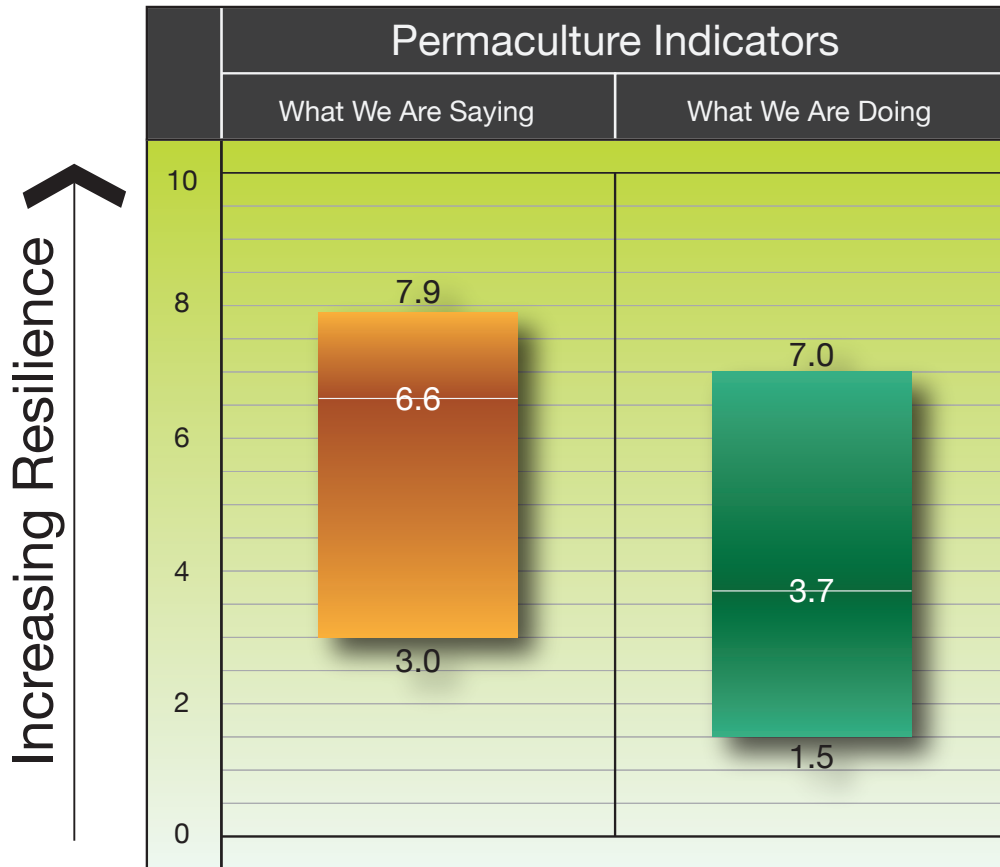
Graph of Opportunities - New Denver Sustainability Indicators



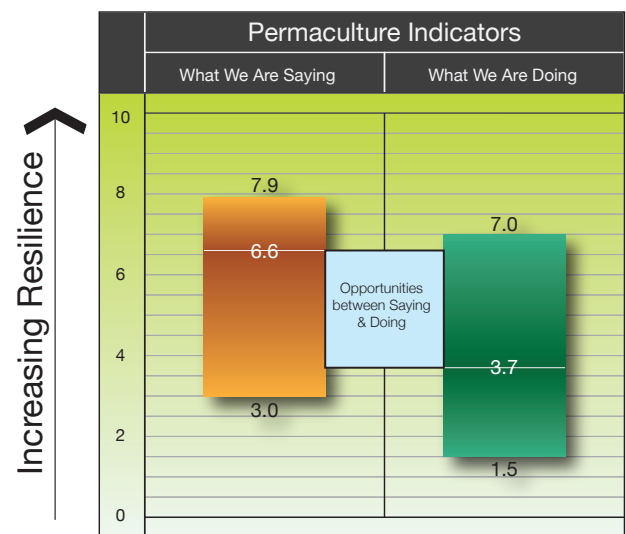
Low Hanging Fruit



## Graph of Opportunities - Permaculture Principles Scores



Low Hanging Fruit





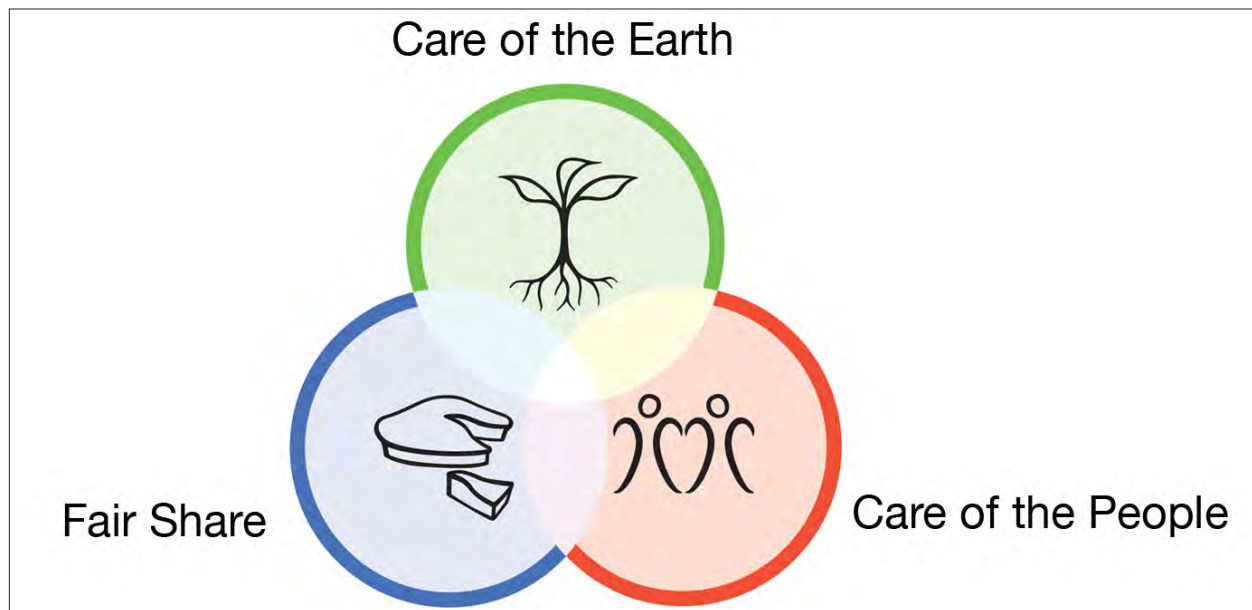
## Appendix D - Permaculture Principles

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## Permaculture Principles<sup>1</sup>

Permaculture Principles were developed over twenty years ago by David Holmgren and Bill Mollison. The principles are based on three ethics which are fundamental to resilience and sustainability. The three ethics include:

1. Care of the People
2. Care of the Earth, and
3. Fair Share



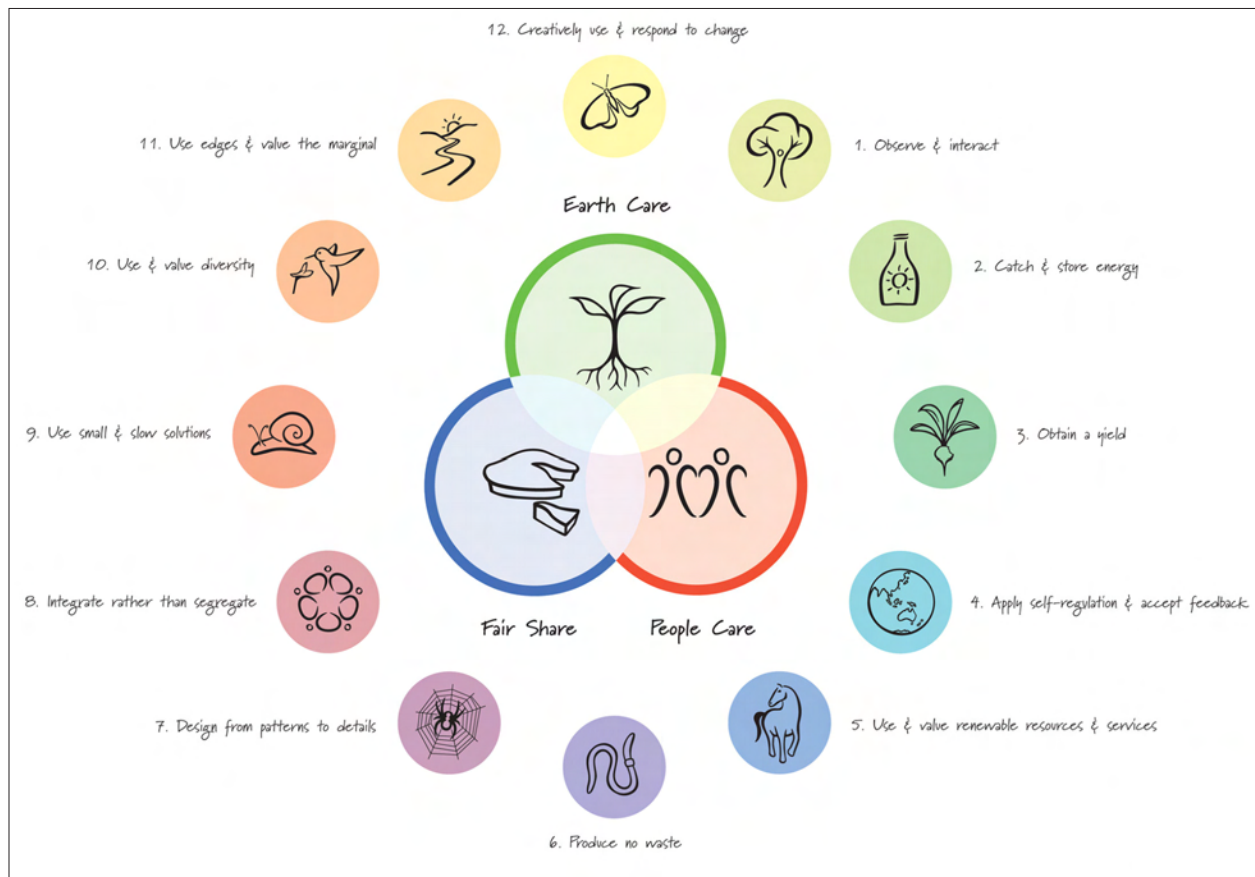
The non-linear and complimentary arrangement is important in the sense that all three should be given equal weight. Care of the people and care of the earth go hand in hand and can be evaluated on many scales. At personal level our most basic needs must be met, air, water, food, clothing and shelter. Meeting these needs with resilience requires that we recognize that the earth is what makes meeting our needs possible. At a community level, it also requires the recognition that the needs of a community are directly tied to the environment. This awareness brings on a self regulating interaction whereby our needs are balanced with their effect on environment.

The idea of fair share can be viewed on many levels as well. In the context of New Denver community concerns, it could be applied to housing and interpreted as ensuring the need for affordable housing for everyone in the community, proper design would ensure a low impact building, thereby reducing operating costs and increasing affordability in the long term.

<sup>1</sup> <http://www.permacultureprinciples.com/principles.php>

## Permaculture Principles

These ethics form the foundational starting point when applying the 12 permaculture principles. The twelve principles are illustrated as follows:



When viewed in a circular form it helps to remind us to avoid the sometimes natural habit of viewing a list in order. Holmgren also intentionally acknowledges the dualistic view of this layout seen as the face of a clock. Experience in applying the principles in real world examples and during the document evaluation process has shown us that Principle 1 - Observe and Interact is the fundamental first step in any process or system. It is therefore intentionally placed at 1 o'clock. Following Principle 1, Principle 2 - Catch and Store Energy, became another important required principle. Our experience has also shown us that if the first 2 principles can be satisfied, the remaining principles tend to cascade more easily into place. Without these first two principles, it is often that the remaining principles were often missing as well.

Below is a brief overview of each principle and its importance in achieving resilience.

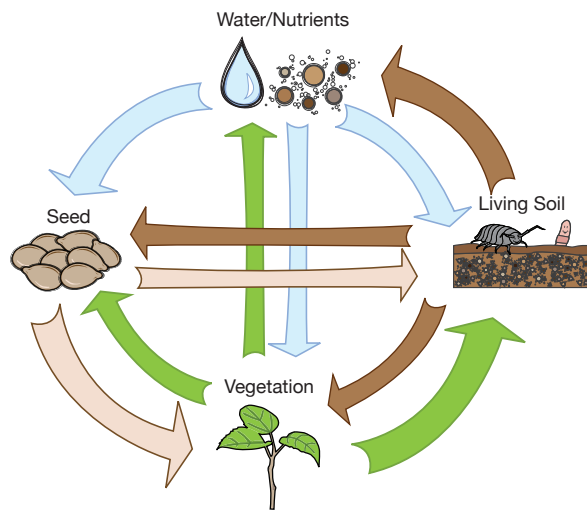
### ***Principle 1 – Observing and Interacting***

The importance of experiential knowledge of a system is the most effective way of learning the effects of changes made in that system. We are reminded to keep open minded, avoid absolutes and dogma. This is where the Precautionary Principle is applied, whereby lack of certainty should not preclude taking right action.

### ***Principle 2 – Catch and Store energy***

Provides a framework for considering what may have value in an uncertain world. The inland temperate rainforest has evolved to catch and store energy using the terrain and gravity and storing it in these key ways:

1. Water/Nutrients
2. Seed
3. Living Soil
4. Vegetation



Awareness of these connections let's us see their application in how we build our environment. A gravity fed water system would be a good example of this principle. From a social perspective, education is arguably the best way for a community to catch and store local knowledge.

### ***Principle 3 – Obtain a Yield***

Grounds the system in the present reality by recognizing that immediate yields are required to survive. These yields could be food from a garden or income from a business investment.

### ***Principle 4 – Future Generational Equity***

This can be viewed as the stabilizing feedback on Principle 3. By considering the future needs of the community we are able to recognize limits on how much yield is appropriate.



### ***Principle 5 – Use and Value Renewable Resources***

Expanding the idea of renewable resources beyond the things that can be extracted from nature. Renewable resources are also found in local labour, knowledge, vernacular, cultural and social traditions.

### ***Principle 6 – Produce no Waste***

From a systems perspective this ensures that we identify waste streams and attempting to reduce or eliminate them by finding some value. Greywater systems are an example of turning waste water into something useful. The added benefit of reducing the load on a septic system is also realized. The 'Super Use' ideas mentioned previously are a good example of this principle.

### ***Principle 7 – Design from Pattern to Details***

This principle is a reminder of the importance of stepping back from the system and observing patterns in nature and society. Stepping back helps visualize the scale of our actions. This visualization reminds us that our actions are felt most strongly at a personal and local level. When our food comes from 3,500 km away, the effects are more likely to be out of site - out of mind.

### ***Principle 8 – Integrate rather than Segregate***

The whole is greater than the sum of its parts. This asks us to recognize the power in cooperation and question the dominant cultural paradigm of competition and individualism.

### ***Principle 9 – Use Small and Slow Solutions***

A quote by EF Shumacher captures the essence of this principle:

“Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius — and a lot of courage — to move in the opposite direction.”<sup>2</sup>

### ***Principle 10 – Use and value Diversity***

Diversity decreases vulnerability to outside shocks. Diversity in our forests and landscape, in the economy and in the demographics of the population all help in building resilience.

### ***Principle 11 – Use Edges and value the Marginal***

New Denver is by geography already on the edge of rural life. Valuing edges ensures that an open mind must be kept to things that might not be of any apparent immediate value. The Zoned Park land on the alluvial fan around Carpenter Creek is an application of this principle.

### ***Principle 12 – Creatively use and respond to Change***

“Vision is not seeing things as they are but as they will be”. The Transition Initiative of Back Casting is a community example of this principle.

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<sup>2</sup> E.F. Shumacher. 1973. *Small is Beautiful – Economics as if people mattered*. This book was a landmark critique of the predominant industrial economic theories by a leading economist of his day.

