Using “Sky Water” in Your Garden

Presentation for the Regional District of Nanaimo
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The Rainwater Connection

THE RAINWATER CONNECTION

- Designing, building and servicing rainwater systems since 2002.
- R&D time averaging 350 hrs/year
- Engineer approved Rainwater Permits
- Development and manufacturing of components.
- Actively promoting rainwater use presentations, workshops, demonstration projects

Simple Rainbarrel Systems

Jubilee Community Gardens, Duncan
Alton House Demonstration Project

Large Scale Garden Systems

The Rainwater Connection have recently installed 5 Garden Systems with 16,000 – 40,000 imp. gallon cisterns (73 – 182 m³)

Commercial Greenhouses

A 2003 GVRD study found that the large collection areas combined with big cisterns and ponds make greenhouses the most cost effective rainwater reusers.

Why Encourage Rainwater Harvesting For City Gardens

- Demand for increasingly expensive, treated water doubles (or triples) during the summer
- Reducing outdoor water use of piped water (Conservation) is important
- Backyard collection and storage of rainwater is the next step (alternative supply)
How Much water can I supply?

3,600 gal
May–Sept. &
1,800 in Oct

Roof Area
1,000 sq. ft.
Cistern
1,000 Gals.

Rainwater Harvesting
the perfect companion to gardening

- Natures watering agent.
- Relaxed and fun way to reduce your water footprint.
- Freedom from government restrictions.

Garden Water Systems
Simple to collect because water can be coloured and a bit acidic.
But system design is important.

Essential Features:
- Debris removal prevents algae growth and reduces cistern cleaning
- Diversion away from tank to storm drain
- Tank design and placement for easy cleaning
- Tank overflow to storm
- Gravity or Pumped distribution

Rainwater Catchment System

CASE EXAMPLES

- System Features
- Installation Costs

GOOD DESIGN + MAINTENANCE = GOOD QUALITY WATER
**Simple Garden Water System**

**Thetis Island**

- 2160 gallons (9,800 Litres) storage filled from Shed Roof (145 SF or 13m²)
- Gravity flow to garden
- Premier 1200 & Premier 960 Tanks: $2,300

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**Richmond Demo Project**

- Single Downspout to 1,660 gal tank.
- Leaf trap and uphill pipe to clean water.
- Knife valve diverts to storm drain

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**Mayne Island Subdivision**

- For Fire Protection and Gardening

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**Thetis Garden System - Continued**

- Leaf trap, uphill sloped
- Transport Pipe & Diverter
- Parts: $140
- 3 hrs Labour

- Tank Fittings:
  - Overflow
  - Valved Connecting Manifold pipe
  - Emerg Water Exit / Drain
  - Sight Tube
  - $800 (parts & labour)

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**Richmond Demo Project - Continued**

- Grundfos MQ3 High Volume Pump
- Mounted underground

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**Mayne Island Subdivision - Continued**

- Section Sketch
- (Design costs $700)
Mayne Island Subdivision Demo Site
House # 1

Leaf and Mini Debris Trap, cleanable pipe under house, and a simple “horseshoe” debris trap

Parts Costs: $300
Install Time: 16 hours

Water into 800 gallon tank with 2 inch overflow Exit fitting for Shur Flow, on-demand pump

Tank cost: $940
Pump Cost: $400

Tofino Demo Project

Triple Cleaning Catchment and First Flush Diverter

Single Downspout: Debris Pail, Horizontal Catchment Pipe; FFD, and dual Screen mesh filters

Design $600
Parts & Tank $2,000
Labour $700
Total $3,300

Thetis Island Garage

Garage roof water into two 2,000 gal tanks

Tanks $2,700
Catchment & fittings $2,300

Mayne Island Subdivision Home

Gutter Dam and “Gutter Glove” direct to flushing/Diverter valve, and across to the fence.

Gutter Guard $650
Catchment $1,250
Cistern $1,850
Tank Fittings $900
Pump $900
TOTAL $5,550

Mayne Island Subdivision Home - Continued

Along the Fence and into the 1,500 gal (6,800 litre) Can West semi burial tank and Grundfos MQ3 pump
Dual Pumping Garden Water System
Salt Spring Island

Rainwater pumped from big rainbarrel to two 1,250 gallon poly tanks

Catchment: 1600
Tanks: 2300
Pump: 800
$4,700

Catchment Piping from 3 sides of house, join and run to underground tank.

Gravity filters in valve box ($800 option)

Catchment System Cost $6,000
(including design and owners manual)
Tank Cost $2,000 plus installation

Deer Run Farm – Salt Spring Island

Sealed Pipe to Ground and gravity flow to twin 2,400 gal tanks

Tanks & Fittings: $4,000

Triple Cleaned Water to Underground Tank

All-in-one debris boxes feed cleanable catchment piping

Case Example

Deer Run Farm – Salt Spring Island

➢ Active retired man looking for challenging do-it-yourself project.
➢ To use “his own water” for his extensive garden
➢ To avoid the chlorine in the piped water
➢ 5 hours design and consultation
➢ built himself in 50 hours

The snow rail is to make roof and gutter cleaning safer.

RAINWATER, a clean, sustainable alternative

Prepared by Bob Burgess
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Storage
The Heart of any West Coast Rainwater Harvesting System

Types of Storage
Above Ground Poly Tanks
Premier 1660 set 14" into ground
Premier 1200 and 3,300 gal tanks

Polyethylene Tanks
Price varies with location

Polyethylene Tanks
Low Profile Poly Leg Tanks
1,000 gallon leg tank (55" tall by 9'6" long) $1,100 - $1,500

Polyethylene Tanks
Rectangular, Semi Burial Tanks work well in crawl spaces

Semi Burial - CONTINUED
Or semi buried in 2 ft. deep hole with soil mounded up over
Tanks $7,000
Installation $3,800
Water Lines $700
Steel Cisterns
Corrugated Steel Tank with Polypropylene Liner

Water Storage

- 16,000 gal. behind trellis
- $1.40 - $1.80 per gallon
- 12,000 gal. in woods

Steel Cistern

- 12,000 imp. gal (55m³)

Bolt-in-place Construction with Liner

- 5,000 – 20,000 gallons

Steel Cistern

Polypropylene “Bag” Liner

- 36 mil Polypropylene
- NSF 61 Rated

Steel Cistern Roofs

- Fabric roof under shed
- Wood-frame and steel roof with inspection hatch

Steel Cistern ~ Wood & Metal Roof

- Rated for BC snow loads
- Full Venting Around Perimeter
Concrete Cisterns
Concrete Cistern Under Garage

or under the house?

$1.80 -$2.30 per gallon

SUPPLEMENTARY SLIDES

Catchment System
Gravity Down, Across, and up to Tank
2 or 3 Stage Cleaning

Catchment System
Gravity Flow to Tank
3 Stage Cleaning

High Volume Garden Water
SCOTT POINT ROAD, SALT SPRING ISLAND

Strathcona Gardens Demo Project
Off the Grid Orchard Irrigation System

Water from 470 SF (44m²) roof delivered to orchard with no electronic pump.

< Gutter guard
Uphill catchment
Pipe with diverter
< “Day Barrel
On Left”
Banjo Filter to top of Premier 1950Gal > (8,900litre) tank.
Strathcona Gardens Demo Project

Complex Valve system allows Hand pumping from cistern To Day Barrel.

- Catch System Parts: $440
- Tank & Barrel: $1,700
- Bilge Pump, Valves & Piping: $530
- Design & Install Labour: $1,900

TOTAL COST: $4,570

Power Efficient, On – Demand Pump

- High Pressure Low Volume: $450 (complete with valve box & connections)

High Volume On – Demand Pump

- Grundfos MQ3: Pump only: $650, Installed at tank: $800-900