

## **RESERVE STUDIES AND RESERVE ACCOUNTS FOR DUMMIES**

*"My wealth has come from a combination of living in America, some lucky genes, and compound interest." Warren Buffet*

### **Oregon Law**

On 6/7/2021, QPM emailed out to all the BVH homeowners the "2021 Reserve Study" ("RS2021") for the Bella Vista Heights Homeowners Association (the "HOA").

The Oregon statutory requirement for a Reserve Study is defined in Oregon Revised Statutes Chapter 94 paragraph 94.595. This statute also defines the requirement for a Reserve Account.

The BVH CC&Rs and Bylaws define more Reserve Study and Reserve Account requirements.

ORS 94.595 is a short statute, and it is written in plain language.

A Homeowner should read it, as well as the relevant parts of the CC&Rs and Bylaws, before reading the contents of this document, and RS2021.

For your convenience all these statutes can be found on [WWW.BVHACCESS.COM](http://WWW.BVHACCESS.COM).

### **Common Area Items**

A Reserve Study and a Reserve Account is mandated because the HOA must maintain the Common Area. The BVH Common Area is defined in the BVH CC&Rs and Plat.

If there wasn't a Common Area, there would be no need for an HOA. The smaller the Common Area, the less the HOA has to spend on its maintenance.

The "items" in the Common Area that the HOA must maintain include: Private Roads, pathways, fences, monuments, easements, mailboxes, streetlights on private roads, concrete pavement, water pumps, items, drainage and irrigation systems, a park, open tracts, etc.....

ORS 94.595(3)(c)(A) requires that the Reserve Study "identify" these items.

However, so far, the BVH HOA has **never** made an accurate and detailed list of all these items. Certainly not one that a homeowner can easily review, and certainly not one that includes precise details of each item's physical attributes, including such quantifiable attributes as size, composition, manufacturer, model number, part number, specification, exact location of the item, age, lifespan, Mean Time Between Failure ("MTBF"), Mean Time to Repair ("MTTR"), current cost to purchase, current labor cost to replace or repair, etc.

RS2021 names and enumerates only 31 items amongst its reports, several of which contain errors. And, even though RS2021 used a “modeling database” to create its reports (page 4-1, para. 4), it “coalesces” identical items into one entity (a “COMBO” item), and then calculates the combo’s reserve expenditures and reserves, instead of each individual item in the combo.

These combos include: Common Area Irrigation Controllers (17 items), Water Feature Lighting (7), Cluster Mailboxes (8). Each individual Controller, each Light, and each Mailbox is likely to need replacement or repair at a different time from the other identical items. RS2021 does not take this this normal eventuality into consideration.

### **Doing with Common Area Items**

As a “guesstimate”, there are about 61 individual Common Area items. *We just do not know.* Whatever the real number is, ORS 94.595 requires that the Reserve Study and Reserve Account must encompass a 30-year future, the rate of inflation, and the return on Reserve Account investments when estimating the reserves needed to meet the cost of maintaining these items.

Based on the statutes, an HOA is faced with the task of estimating how much to set aside into the Reserve Account so that there will be sufficient funds to pay for future maintenance.

The significant word here is “estimation”; not “prediction”.

Normally, within a 30-year timespan, ruinous events such as: the Savings and Loan Crisis (1986), financial crises (2007/2008), naturally occurring problems (e.g. landslides on East La Strada in 2012, and 2017), etc. will occur. It’s almost guaranteed!

To mitigate such inevitable ruinous events, the CC&R’s [para. 1.3.10. (f) ] and Bylaws 3.17.(i) (b) require that “contingencies” be included in the budget and reserve account.

However, certain other isolated and unexpected events can occur normally before an item’s MTBF: like a pump motor burning out, or a letter box being vandalized and burned out, etc.

It unfortunate that RS2021 deliberately chose to combine certain items into combos, as, by doing so, it cannot easily deal with an unplanned replacement of one item in a combo while the rest of the items in the combo continue to operate as per the planned replacement schedule.

Whenever one of a combo’s items fails and is replaced, its projected replacement dates will differ from those of the other combo items, and all the expenditure calculations and projections must be reworked.

For an individual item, the obvious way to process an unscheduled replacement in a reserve study is to change the item’s “Date In Service” year, and then update the item’s projected replacement years starting from the new “Date In Service”.

RS2021 does not explain clearly how it caters for this situation.

### **Encompassing the next Thirty Years**

(See RS2021 Page 1, Page 3 para. 3, Page 6 para. 10, Page 203 paras. 5&6, Page A-17.)

Pursuant to its commitment to a 30-year timescale, RS2021, on page 4-1, paragraph 2, then changes its mind and states that *only the very first one of an item's replacement expenditures is included!* All the expenditures after the very first one are explicitly excluded without any explanation. The report on page A-13 has similar omissions.

And the reports on pages 4-6, 5-8, 4-7, A-13, and A-19 *also stop at year 2042!*

RS2021 does not explain why (1) it creates combo items, and why (2) it only processes the first replacement year, and why (3) several reports do not include replacement years beyond 2042.

Any standard “modeling database” would easily handle these unnecessary derelictions that obviously create significant discrepancies in RS2021.

Also consider this: A reserve study must deal with the possibility that an item with a useful life of 5 years might keep working perfectly after its MTBF, and might continue to do so for many more years if the HOA adopts an “if it isn't broke, don't fix it” approach. (And I hope they do!)

Such an item will, *actuarially*, need replacement at any day; however the reserve account will already contain enough money to meet this expense as it will have been accumulated in the reserve account specifically to pay for replacing this item.

This amount in the reserve account must be set aside *untouched* until it is required. Note also that, as the expected replacement cost of this long-lived item increases with time because of inflation, the amount in this untouched sub-account must increase accordingly.

### **Calculating the Projected Expenditures**

An efficient HOA should know **for sure** what the cost of parts and labor are at **today's prices** are. (The HOA will soon learn what these costs are when an item must be replaced!)

RS2021 (page 2-2 para. 3, 2-3 para. 8, 5-1 para.1, A-16, foot of page.) predicts the future cost of replacing or repairing an item by compounding the known present day replacement cost of the item by the inflation rate (RS2021 uses 3% annually) over the useful life of the item.

For example, if, in 2021, the HOA completes the surface repair of a private road, and the contractor's parts and labor costs in 2021 are \$11,074, and the expected life of the road surface is

20 years, then using RS2021's 3% inflation rate compounded annually over 20 years, the cost of repairing the road in 20 years is \$20,000. (Monthly compounding is about \$100 more)

To comply with the spirit of Oregon law, the CC&Rs and Bylaws, the HOA's reserve study should explain how it will set aside reserves that will accumulate to pay the \$20,000 in 2040.

But this expenditure is a long way off, and the 2043 to 2050 expenditures, the ones that RS2021 ignores, are even further off.

According to one statistic, in the US, the average length of time that a homeowner stays in their residence before moving is 12 years. Some statistics for this are even shorter.

When looking at the HOA budget and reserve estimates for the next 30 years, a **new homeowner** might question why **they** need to pay HOA dues to cover Common Area maintenance and replacement expenditures that will definitely only occur after **they** have left the community?

A fair question: However a new owner inherits a well-maintained Common Area when they move into a community, as well as a Reserve Fund, all paid for by their predecessors. A new owner is expected to contribute to the HOA's prudent policies that plan for decades ahead.

### **Compound Interest**

In the example above, the \$20,000 expense in 2040 was calculated using a compound interest calculator. (<https://www.investor.gov/financial-tools-calculators/calculators/compound-interest-calculator>)

Conversely, starting in 2021, with an initial investment of zero dollars, an amount of \$20,000 will be accrued by 2040 if a monthly contribution of \$79.25c is put in an investment account that earns interest at 0.5% per annum compounded monthly for 20 years.

(Taxation issues are discussed later.)

So if the HOA starts saving \$79.25c each month (76c per month from each of the 106 lot owners), by 2040 there'll be enough money to pay for the road renovation. Unless, in the intervening 20 years, their *savings are wiped out* because of a natural disaster like a landslide, or a major financial crisis like hyperinflation, deflation, stagflation, and negative interest rates, etc. All of these scenarios have occurred in Western economies in the last 50 years.

But we must remember that we are just *estimating* here, we are not making predictions.

Page 5-2 of RS2021 details all the future annual expenditures in the "Annual Reserve Expenditure Detail" report. These expenditures were calculated by compounding items' "Current Cost" by the 3% inflation rate. For example, on page 4-2 the Irrigation System

Upgrade–Entrances replacement has a **2021 cost of \$7,500**, and will be replaced in 5 years at an estimated cost of **\$8,695**. (Note that, in this report, the column titled “Date In Service” shows the replacement year, not the Date-In-Service!)

This \$8,695 amount appears again on page 5-3 on the Annual Reserve Expenditure Detail report that shows all the item expenditures from year 2021 to 2048, subtotaled by year to give the annual expenditure for each year.

Sadly, there is not a total of all these annual totals at the foot of page 5-7, but this total amount appears as “Total Reserve Spending” of **\$852,707.00** on page 2-3.

**My Very Simple Page 6 Table Below.**

The table shown below on page 6 takes annual totals from the RS2021 page 5-3’s “Annual Reserve Expenditure Detail” report as a starting point for the calculation of the monthly savings that would be required to meet these totalled expenditures. The page 6 table’s Expenditures column contains the RS2021’s “Annual Totals. *Please check them.* The “Required Monthly Savings” column contains the monthly contributions that are needed to produce these Annual Totals. Basic Compound Interest. *Please also check these.*

*A handy compound interest calculator is at: <https://www.investor.gov/financial-tools-calculators/calculators/compound-interest-calculator>. This calculator can give you both inflated costs, as well as a “Savings Goal Calculator” that gives the monthly contributions needed to meet a future expenditure.*

The page 6 table’s columns are, left to right, (1) the year in which the total expenditure occurs, (2) the total expenditure, (3) the year’s difference from 2021 (4) The monthly saving required to meet the expenditure, (5) the per lot total, that is only calculated on the 4th column’s total.

The *last line* of this table shows, from left to right, (1) the **\$852,707** total that matches RS2021 page 2-3 para 6, (2) the amount that the HOA must save each month, and (3) each one of the 106 lots’ monthly share.

These numbers might shock you. I hope that I have not made any gross errors, but if you think that I have, please immediately contact me at [contact@bvhaccess.com](mailto:contact@bvhaccess.com) and point them out.

However, if the numbers are correct, you might think that the required monthly contribution that the HOA must add to the reserve account is too much, and something must be done to reduce it.

Before I deal with this, I must point out that the 0.5% interest on savings is much too optimistic as the present HOA Reserve Account with “Alliance Reserve Money Market” is, *at most, 0.25%!*

More about this later.

<b>Year</b>	<b>Expenditures</b>	<b>Years difference</b>	<b>Required Monthly Savings (0.5% accruing monthly)</b>	<b>Per Lot</b>
2021	16876	0	0	
2022	23999	1	1995	
2023	0	2	0	
2024	11474	3	316.38	
2025	3416	4	70.45	
2026	39010	5	642.19	
2027	31434	6	430.14	
2028	6764	7	79.13	
2029	0	8	0	
2030	1321	9	11.95	
2031	10617	10	86.29	
2032	57494	11	423.78	
2033	8948	12	60.30	
2034	0	13	0	
2035	0	14	0	
2036	21578	15	115.46	
2037	247911	16	1240.51	
2038	9091	17	42.70	
2039	10318	18	45.66	
2040	5699	19	23.83	
2041	14268	20	56.54	
2042	164078	21	692.94	
2043	0	22	0	
2044	20723	23	70.86	
2045	8209	24	26.83	
2046	70005	25	219.11	
2049	57257	26	171.88	
2050	12217	27	35.22	
	852707		6857.15	64.69

Look again at the table on page 6 above.

If the 106 (in 2021) lot owners learned that the HOA Board was saving **\$1240.51c** a month for an expenditure of **\$247,911 in 2037**, there might be a riot!

Every prudent method must be considered to reduce the amount of the longer term expenditures .

For example, in the first few years, the monthly contributions to the reserve account must be close to 100% of what's needed. For years 4, 5, and 6, though, perhaps only 75% of the monthly contributions might be appropriate, and for years 7, 8, and 9, even less, and so on.

So the table needs an additional column that contains a multiplicative **reduction factor** that will be used to reduce the long term annual expenditures, so that they will be funded at less than the full rate. For example, the table might become something like the *tentative* one on page 8.

But look at the difference between \$805,707 and \$158,510! Worrying you, is it? (Note that the "Per Lot Per Month" only contains a value (\$31.32) only in the last row because I couldn't be bothered putting small values in the above rows.)

The key question that the HOA Board must consider for their Reserve Study planning is: **"What total monthly contribution can we include in the 106 homeowners' monthly dues without the homeowners complaining about it?"**

### **What To Do About It**

There is one ***extremely important*** task that, *without question*, must be completed properly before asting time juggling numbers: it is to make a *complete, detailed, and thorough examination of the Common Area and the maintenance requirements of the items in it. **No more combo items.*** Every tract and component of the Common Area that is enumerated in the CC&Rs ARTICLE VI should be examined. Here are a few Common Area entities that were inadequately handled by RS2021:

1. The AG Buffer. This is ignored in RS2021. The buffer has a 2000' fence, and much more.
2. Tract C. This Tract does NOT have a chain link fence. The asphalt pathway is in the wrong place and we cannot use it. The costs of maintaining this path should be excluded.
3. Monuments and signage. Changes were made to lot 39 adjacent to the water feature. There are new "Fire Lane" signs, not the ones in the now ***obsolete PUD-05-25 document!!!!***
4. "Combos". Each Common Area Irrigation Controller (17 of them), each Water Feature Light (7 of them), and each Cluster Mailbox (8 of them) should be treated individually in the inventory of Common Area items for all the reasons described earlier.
5. Cluster Mailboxes. Isn't the expected useful life of 25 years much too short? Make it 50 years. A mailbox is not going to wear out nor be replaced for 50 years unless it was shoddily manufactured, or it is vandalized or hit by a vehicle.
6. Streetlights on the Private Streets. They are sodium, not LED ones like the city lights are.

Year	Expenditures	Fraction of Expenditure for the Year	Reduced Expenditure	Years difference	Required Monthly Savings (0.5% accruing monthly)	Per Lot Per Month
2021	16876	1.00	16876	0	0	
2022	23999	1.00	23999	1	1995.25	
2023	0	1.00	0	2	0	
2024	11474	0.70	8031.8	3	221.45	
2025	3416	0.70	2391.2	4	49.31	
2026	39010	0.70	27307	5	449.53	
2027	31434	0.50	15717	6	215.07	
2028	6764	0.50	3382	7	39.56	
2029	0	0.50	0	8	0	
2030	1321	0.30	396.3	9	3.58	
2031	10617	0.30	3185.1	10	25.88	
2032	57494	0.30	17248.2	11	127.15	
2033	8948	0.30	2684.4	12	18.08	
2034	0	0.30	0	13	0	
2035	0	0.30	0	14	0	
2036	21578	0.10	2157.8	15	11.54	
2037	247911	0.10	24791.1	16	124.05	
2038	9091	0.10	909.1	17	4.27	
2039	10318	0.10	1031.8	18	4.56	
2040	5699	0.10	569.9	19	2.38	
2041	14268	0.10	1426.8	20	5.65	
2042	164078	0.02	3281.56	21	12.35	
2043	0	0.02	0	22	0	
2044	20723	0.02	414.46	23	1.41	
2045	8209	0.02	164.18	24	1.34	
2046	70005	0.02	1400.1	25	4.38	
2047	57257	0.02	1145.14	26	3.43	
2048	12217	0.00	0	27	0	
	852707		158510		3320	31.32

**Number crunching is of no value, without an up-to-date and accurate and very detailed Common Area item inventory that includes present day estimates for item replacements.**

**Return on Investments**

As of 6/30/2020, the HOA's reserve money was in a "Alliance Reserve Money Market". It is *financial lunacy* to place money for expenditures 30 years hence into such an account.

The money in the Reserve Account, supposedly, can only be used for reserve purposes, even though the HOA Board can divert them to other purposes (See ORS Ch 94, CC&Rs and Bylaws).

Even so, most of the money in the reserve account will normally stay in it starting from a few years ahead and up to 30 years.

This money is a prime candidate for being invested in long-term investments, **not** money market accounts.

Consider this: an individual who wants the maximum possible security for their long term investments, and protection from inflation, and has no present need for periodic interest payments, but can hold the investment to maturity, could, for example, invest it in inflation linked Treasury I-Bonds up to \$10,000 a year, tax and interest free until maturity.

An HOA is not an individual, so it cannot invest in I-Bonds, but an HOA could consider opening a Treasury Direct Account, just like banks do, and invest a portion of the reserves - the ones that are only needed in 5 or more years - in something better than a piddling money market account.

Surely the "Bank of BVH HOA" can get something better than the 0.25% from Alliance. If not, the monthly contributions that come from homeowners dues will have to go up!

Five-year, 7-year and 10-year Treasury Notes yield more than 0.5% before taxation.

This subject needs research, or the dues will go up. RS2021 is silent on this.

**Taxation**

This interest income from reserve account money is not immediately needed. For that reason, *tax deferred* investments would be a good choice.

RS2021 assumes that BVH HOA's income from interest on the reserve account is taxed at 15%.

15% is far too high, considering that the HOA can deduct expenses for Common Area maintenance. This subject needs research, or the dues will go up. RS2021 is silent on this.

## **Summary**

1. Do a detailed Common Area Inventory with current replacement costs for each and every item.
2. Do research on where to invest the reserve account money. Get a realistic investment return.
3. Do research on the the taxation of HOA reserve funds, including deductible expenditures.
4. Using the information gathered this far, use compoud interest to produce a table of the expenditures for the next 30 years, similar to the “Annual Reserve Expenditure Detail” report on RS2021 page 5-2, but our table will have 60+ items and 100+ annual expenditures.
5. From these annual expenditures, use a compound interest calculator to calculate the required monthly contributions to the reserve account needed to meet these expenditure targets.
6. By general agreement with the HOA members, decide of a monthly allocation to the reserve account from the members’ monthly dues.
7. For each year of the future 30 years, adjust the portion of the year’s expenditures for which savings must be made, until the monthly contributions to the reserve account are acceptable to the homeowners, yet meet prudent reserve account requirements.

## **Epilogue**

None of this is rocket science.

A fifty page study, bloated with unnecessary irrelevancies, verbiage, and errors is not needed.

Once you have a complete, detailed, and accurate inventory of the Common Area items, a reserve study can be created using pencil, paper and a compound interest calculator (or even a “Compound Interest Ready Reckoner” booklet, like we used sixty years ago before calculators!)

Many reserve studies are created using Microsoft Excel.

***But for five years, the HOA has paid \$1350 a year for a reserve study that, from 2014, has been unfit for its purpose.***

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