

"Treasures in the Basement"

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Evaporation pond and piles of salt at the Morton Plant in Glendale, Arizona

Imagine that where you are living has a basement or cellar. Yes, I know that few homes around here have basements, but let's just pretend. Now imagine that in all the time you've lived there, you have never even been in that basement. Not only that, you don't know how big it is, how old it is, what it looks like, or even what all is down there!

One could ask, "Why the lack of curiosity?" Well, to be fair and make my analogy more fitting, maybe the cellar doors have long been covered over by newer flooring, or walled off. Maybe you have just forgotten all about them and the basement.

Well, here is a reminder, of sorts. The Valley of the Sun is our home, and it does have a "basement". But how often do we walk or drive around the Phoenix metro area and think about what is under our roads, yards, and spacious desert?

To begin with, there are huge, really deep basins. Have you ever been to Death Valley, California, or seen pictures of it? It's an amazingly rugged place – a monstrous, barren trench, the bottom of which is below sea level, surrounded by stark, jagged mountains. In your mind, take that image and fill the trench nearly to its top with sand, gravel, clay, all eroded from the mountains around, and one more thing: salt. Lots of salt. And there you have a picture of our Valley's basement!

And I mean lots and lots of salt. Yes, good old sodium chloride, plus a few trace elements, not quite pure enough to sell at Safeway as "table salt", but I'll bet that if I put some on your French fries, you wouldn't know the difference. There may be more than 15 cubic miles of it! This deposit, known as the Luke Salt Deposit, may be almost 10,000 feet thick, and it occupies a great deal of the valley underneath Glendale, Sun City, Peoria, and other West Valley cities. Seen from above, it would be shaped roughly like a rounded triangle. A side view would most likely show it as a dome or mound-shaped structure, thickest near its midpoint from side to side, and pinching out to nothing at its edges.

If you drive out to the corner of Glendale and Dysart Roads, you are almost directly above its thickest spot and center, its top around 500 feet below you. From there, drive southwest over to Indian School and Cotton Lane or SR303 (about 6 miles by air), and you are near its southwest corner. Its northern corner is approximately under Bill Gentry Park in El Mirage, and its southeastern corner lies beneath McDowell Road and 99th Avenue.

So where did all that salt come from? We think it was laid down sometime between about 15 and 12 million years before present. To geologists, that is not a long time ago, and that is echoed by the fact the above-mentioned sand and gravel surrounding the salt have not yet consolidated into solid rock. During that time, it is

thought that our developing valley was filled by one or more vast lakes. These lakes were closed off by the surrounding topography; their waters never drained out to the sea. As the climate later changed and the water evaporated, the dissolved salts within (originally from the eroded rocks of the mountains or preexisting salt beds) became concentrated, and eventually formed flat and deep layers of salt. You can see a modern-day example of such unburied salt beds in Utah in the Great Salt Lake Desert.

Hardened salt, which is somewhat plastic, has a low density and is buoyant relative to the ground around it. It has "mushroomed" up, creating the dome shape of the salt body. There are some small hills along Litchfield Road, just north of Camelback Road,

where the overlying valley fill has been pushed up – the surface expression of this bulge.

Morton Salt currently operates an extraction facility near the center of the deposit. Here, water is pumped down into the structure where it dissolves the salt. It is then brought up to the surface and evaporated in large ponds. The recovered salt goes to serve many purposes, in this case, all industrial. According to Michele Jones, chemist at the plant, there are "some 14,000 uses of salt in today's world!" Water softening equipment, for example, employs this salt.

I'll venture that your life is touched often by the Luke Salt Deposit, more often than you realize, by one of these 14,000 ways – hidden treasure from the "basement" of the Valley of the Sun.

--- *Richard Allen*

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