Our Ocean Backyard

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The Search for Oil in Santa Cruzs

On August 27, 1859, Edwin Drake struck oil in Titusville, Pennsylvania and forever changed the energy supply and economy of the United States. Wood had been the dominant fuel until about 1850 when coal begin to be used, which then dominated our energy supply for the next 50 or 60 years. But with the discovery of oil and the ability to refine it to different products, as well as the development of the internal combustion engine and automobiles, the use of oil gradually increased.

By 1950, oil surpassed coal as an energy source and this trend continues. Today 69% of our U.S. energy is provided by oil and gas (both of which form in the marine environment from microscopic marine life), with coal in a continuing decline to where it now only provides 12% of our energy. It has become increasingly uneconomical and is also the dirtiest fossil fuel we still use. The sooner we quit mining and burning coal, the better for everyone.

With the understanding that oil and gas could be recovered from sedimentary rocks (shales and sandstones, for example), exploration for these preserved hydrocarbons expanded rapidly as many states wanted to get in on this new gold rush. Because much of California had been covered by ocean in the geologic past, drilling was soon initiated in many locations around the state, the San Joaquin Valley, the Salinas Valley, Long Beach, Ventura, Summerland, and countless other places.

Santa Cruz was not to be left out, however, and we have a history of this search for oil. Natural seeps of oil and deposits of natural asphalt (essentially tar sands) had long been known along the North Coast and the native Ohlones used this to seal canoes and cooking vessels among other things.

In addition to its us in Santa Cruz, this natural asphalt from the North Coast was shipped to San Francisco, Seattle and even Salt Lake City to pave their streets. Today, driving north on Highway 1, you can glance inland up Majors Creek Canyon, about six miles north of the city limits, and see massive, steep black cliffs, which are composed of bitumen-saturated sandstone, or rock asphalt. A large portion of the cliffs on the north side of the canyon collapsed in a massive landslide in 1960, damming Majors Creek and forming a small lake. A few hundred yards further, a turnoff on the left takes you through the little community of Majors, which used to have a small school known as the Petroleum School.

The rock asphalt or bitumen-saturated sandstone in this area was injected from below into the Santa Cruz Mudstone in a fluid state. Numerous sandstone dikes and sills, many of which contain bituminous material, are exposed in the seacliffs and road cuts between Wilder Creek and Greyhound Rock. The underlying Santa Margarita Sandstone, the source of these intrusions and a geologic formation quarried for sand across Highway 1 from the entrance to Wilder Ranch State Park, contains varying amounts of bitumen. The hydrocarbons are believed to have migrated into the Santa Margarita Sandstone from the underlying and older Monterey Shale, one of California’s largest oil producing formations.

These oil-impregnated layers are up to 40 feet thick, and when sufficiently warmed by the sun, may show tar dripping out at the surface. An estimated 614,000 tons of asphaltic paving material, worth approximately $2,360,000, was produced from this area between 1888 and 1914. Production was intermittent after the 1920’s, with the last of the quarries ceasing operations in the 1940’s.

The discovery of oil in southern California and the presence of the asphalt along the North Coast led to the drilling of a number of wells on the marine terraces, some of these thousands of feet deep. While fortunes were expected, the amounts recovered were small. A oil well was even drilled in De LaVeaga Park about 1926, reaching a total depth of 3,400 feet. While expectations were high as can be seen in the crowd around the drilling derrick, only a few traces of oil were reported.

In 1955, Husky Oil Company in partnership with the Swedish Oil Shale Company began an experimental project using gas-fired burners inserted into shallow wells in the asphalt sands of the North Coast in an effort to liquefy and extract petroleum. Over a 3-year period, a total of 228 burner-producer wells were drilled into the asphaltic sandstone, raising down-hole temperatures to 600 degrees Fahrenheit. When completed, 2,665 barrels of oil and 4,520 million cubic feet of natural gas were recovered. While this was a reasonable recovery rate, fuels costs and high heat losses made this an uneconomical project. Fortunately for us, we never became an oil producing area.