

Dedicated to the increase and diffusion of knowledge about how the nation's lands are apportioned, utilized, and perceived.

The Lay of the Land

The Center for Land Use Interpretation



WINTER 2016

Land really is the best art. -Andy Warhol

FANTASY AND REALTY HOMING IN ON THE AMERICAN DREAM



One of the classic palatial residences along the Gold Coast, on the north shore of Long Island, where the barons of a previous era had their fantasy homes close to New York City. This home, at 26 Pond Road, near Gatsby Lane in Kings Point, is on the market for \$100 million. Image: Zillow

ALL OF US have to live somewhere, and what we call home says a lot about who we are as individuals, and as a nation. According to the US Census Bureau, of the more than 115 million homes in the US, 8% are mobile homes, 17% are apartments, 10% are in 2-4 unit buildings, and 60% are single-family detached structures, what is generally understood to be a "house." The value of the average American home, incidentally, is around \$200,000.

At the top end of the real estate market, the idea of home takes on spectacular dimensions, and spans the nation. With internet tools like Trulia and Zillow, homes currently on the market for \$10 million or more can be found in abundance. Mapping the places where the highest concentration of these homes appear, from the Hamptons to Malibu, presents a national realm of fantasy realty, where the American Dream is as vivid and obtainable as the horizon.

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FOREGROUND THE LANDSCAPE OF GOLF IN AMERICA



America's golfscape was the subject of an exhibit at CLUI Los Angeles May 22–September 20, 2015. Descriptive panels and images were on the walls, and the floor of the exhibit was turned into a putting green. A mural depicted the green of the seventh hole at Pebble Beach, one of the most iconic golf courses in the country, located on the California Coast, at the end of the landscape of golf. CLUI photo

WITH MORE THAN 17,000 golf courses in the country, half of the world's total, the USA is the Nation of Golf. Grouped together, these courses would cover 4,000 square miles. If the state of golf were a state, it would rank, in size, between Delaware and Connecticut. Or arranged another way, imagine a national golf course, more than a mile wide and 3,000 miles long, spanning the continent: 306,000 holes of golf on a course stretching from Myrtle Beach to Torrey Pines.

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Editor's Note

Welcome to the 39th issue of the *Lay of the Land*. This issue covers some of the activities we have been engaged in over the last year, including our first exhibition on the subject of housing. Domestic land use is an important subject, of course, as homes cover much of the ground of America. We also did our first exhibit about recreational land use, focusing on golf. These two programs present a coupling, and a binary. On one hand is something that is essential and unavoidable: home. On the other hand is something that is, to many, frivolous, elitist, and wasteful: golf. But consider the possibility that these binaries can be inverted—that homes can mutate into monsters of indulgence, and golf can wither into passive playscapes on otherwise undevelopable land like closed landfills, or flood control basins. Something to consider, maybe. This newsletter is a bit shorter than recent ones, which might come as a relief to many of you. But for the rest of you, we offer the nation's least populated state, Wyoming, which seems to go on forever, in its own way. Thanks for being there, one way or another. *Fore! . . .*

LANDSCAPE OF GOLF

Though numbers are declining, 25 million Americans play golf—about one out of every 13 of us. Four million are considered serious golfers, playing 25 times a year. This is down from a peak of 6.9 million in 2000. The decline is attributed to an increase in the pace of life, and the comparatively long stretches of time required to play the game—four hours for 18 holes is typical. Also, golf is expensive, with high fees needed to cover maintenance—and extensive, as courses cover more than a hundred acres, and, because they are so big, most people have to pay to rent carts (or people) to carry their heavy clubs around. It usually costs more than one hundred dollars to play a round, and many hundreds at fancy courses. Smaller courses and faster versions of the game, they say, are attracting new players. Still, golf is big, and it is not going to disappear.

At least a quarter of the courses in the country are indeed exclusive, accessible to club members only. The rest are generally open to the public, for a fee. Some are privately owned, but many (around 15%) are owned by municipalities. The City of Los Angeles Department of Recreation and Parks, for example, operates 13 courses throughout the city, seven of them full size with 18 holes, where fees are typically \$40 or less. The others are nine hole courses, 3-par, or other types of smaller and practice courses, where people can learn to play without getting in the way of others.

Most sports are played on rectangles of consistent dimensions, and can be pursued almost anywhere, even indoors. Golf's field of play is irregular in form and defined by features of the outdoors such as grass, trees, sand, mounds, and water, reflecting the origins of the game, from the coast of Scotland. Golf is a sport played on, and with, a landscape. In this way it is unique.

A typical 18-hole course is 150 acres in size, about half of which is maintained turf. Each hole is a microcosm, an opportunity to project oneself into terrain. Golf is about extending one's reach, over hundreds of yards, and the pleasure of arriving on target, and filling a hole.

Whether golfers are aware of this intuitively or not, the three phases of golf can be seen as a parable of life's voyage—launching at birth, navigating a safe passage, and successfully planting a seed. Then moving on.

On one end is the tee—the launch point, the start of the game. You may see the target in the distance, but you often don't; it is too far away, or it's around a dogleg and obscured by trees. In the middle is the fairway, punctuated by hazards and traps, and bounded by roughs and woods. Avoiding them, escaping their clutches, is the central challenge of the game. You hit the ball hardest at the beginning, hoping it lands at a good spot, so that it takes just one more shot to get it on to the green—or even into the hole, if you are lucky. Once on the placid green, a fine carpet of highly engineered soils and grasses, the final putt/s is a compression of scale—a test of poise, precision, mastery, and calm.

Usually it takes more than three whacks or taps to get the ball in the hole. If it is expected to take four, then it's a par four hole, which is typical. Once the ball is rendered into its cup, it all begins again, another adventure in a story that is 18 chapters long (or nine, if you are short on time).



Step 1: The tee box. Most courses have a few different teeing-off points for each hole at different distances from the hole, and sometimes marked with the yardage from the hole (409 in this case). Tee positions are usually color-coded, with pairs of colored tee-markers forming a line on which you can take your place. They are usually ranked (from hardest to easiest): black, blue, white, red, and green, though this can vary. CLUI photo



Step 2: After teeing off, the ball enters the fairway, the landscape between the tee and the hole. The fairway is a vista into which golfers pass, to catch up with their ball, for the third and last part of their journey through this hole. CLUI photo

Golf courses are romantic places, evoking notions of a pastoral sublime. They are also site-specific, distilling scenic qualities of the place where they are. In this way golf is a celebration of the variety and character of the American landscape. Primarily, though, golf is a landscape reduced to a functional stage, a simplified vista, serving the needs of the sport, which is, like most things in America, an industry. Golf is an assertion that nature can be thoroughly tamed, sculpted, and placed under control, so long as we can keep it up. ♦



Step 3: Put the ball in the hole, then start all over again. CLUI photo

See page 12 for a map of some notable golf courses across the nation.

OFF THE BOAT
A VISIT TO HANNIBAL MISSOURI

Over the years the CLUI has been exploring the Mississippi River, from the water and from the land. This latest report is from a visit to the old river town of Hannibal, home of Mark Twain, when the water was rising and the levee floodgates were going in last summer.



Mississippi River Mile 1,263 AHP: Hill Street emerges from the Mississippi. (AHP, by the way, is the standard way of marking river miles on the Mississippi, and means Above Head of Passes, the river's zero mile, near the Gulf of Mexico.) CLUI photo

HANNIBAL IS A place largely about Mark Twain. It's a real town that presents its history as a fictional place, as if it were real, which it is, in a sense. This is a tourist town, with the Mark Twain Hotel, the Mark Twain Brewing Company, the Mark Twain Dinette, the Mark Twain Riverboat, and the Mark Twain Museum. Twain was a professional tourist storyteller, and his town has become a place about the fiction of tourism.

Mark Twain (born Samuel Clemens) told stories of the American Land in a very geographic way. He grew up in the middle of the country, at the gateway to the West, where he was weaned on the Mississippi, that great highway of early American commerce, and conveyor of liquefied national terrain. Twain went all the way west as a young man in the 1860s, with the miners of the Sierra Nevada, and then east, settling in Elmira, New York, and Hartford, Connecticut, where he wrote most of his stories. These stories were, of course, about his travels, or, most famously, about characters like Tom Sawyer and Huckleberry Finn, made-up people in a made-up town on the very real river.

His stories were his own story, his youth, and the young, growing nation. His lucid tales were interpretations of a place in the heart of the heartland, told to a nation developing its identity and minting its folklore. Twain's tales of the American Land have become part of the American Land. And no more than here, in this little river town Twain called St. Petersburg in his novels, but which, in reality, such as it is, is actually Hannibal.

The epicenter of Hannibal is a block-long stretch of Hill Street that has been closed to traffic, where the fictional and real towns fuse and where differing realities and times are folded on top of one another in a kind of interpretive quantum space.



The interpretive center, in a former pizza restaurant.

CLUI photo

The entry point into the wormhole is the interpretive center of the Mark Twain Boyhood Home and Museum. Here, with an admission charged, you can consider exhibits, installed in 2005, that describe the story of Samuel Clemens' life in Hannibal, and the people and places from his childhood that became the characters and locations in his books. Or you can walk out the door, and look around the amply text-enhanced buildings outside.



Boyhood Home and stone WPA-built museum next to it.

CLUI photo

Passing through a gateway, you emerge on Hill Street, at the Boyhood Home of Samuel Clemens. This is where he did indeed live with his family for most of his formative years, between the ages of eight and eighteen (1844 to 1853), when he left town. After his family left, the house was rented for another fifty years, and was set to be torn down in 1911, when it was saved and bought by a local resident and donated to the city to be preserved as a museum about Mark Twain. It has been open to the public as a historic home since then, making it one of the most historic historic homes in the nation.

The centennial of Twain's birth in 1935 brought a year of celebration to the town, a celebration that lasted even longer, boosted by Hollywood productions underway at the time. In 1937, with some of the cast of the film *The Adventures of Tom Sawyer* present, a new museum building next to the Boyhood Home was opened, with an expanded museum about Twain. Built of stone, in the style of the WPA that made it, it is now a gift shop. As if they couldn't stop hefting rocks, the WPA extended the back wall of the building into a massive stone wall to separate the historic wooden buildings from an adjacent lumberyard, and the risk of fire it represented, allegedly. The lumberyard is now the interpretive center, but the stone wall remains, at the back of the backyard of the Boyhood Home.

ON THE MISSISSIPPI



Marking the front yard of the Boyhood Home is Tom Sawyer's white picket fence, where a bucket and two brushes cabled to the ground are available for parents to take pictures of their kids being convinced to pretend to paint the fence. CLUI photo

Across the street from the Boyhood Home is Becky Thatcher's House, which, of course, it was not. It was the home of Laura Hawkins, a friend of young Samuel Clemens, who was the model for the Becky Thatcher character in Mark Twain's *Tom Sawyer*.

Next door to it is John Clemens' Law Office, where Samuel Clemens' father worked as a Justice of the Peace—though it was not actually there, where it is. It was located elsewhere in town, and was bought by Warner Brothers, who made the Tom Sawyer film in 1937. They gave it to the town, which eventually had it moved to its current location, next to Becky Thatcher's House.

Nearby, too, is the Huckleberry Finn House. Of course, being a fictional character, Huck never lived here. This was the home of Tom Blankenship, the boyhood friend of Samuel Clemens who he cites as the inspiration for his Huckleberry Finn character. But this is not really the house that Tom Blankenship lived in. That was torn down more than a century ago. This is a reconstruction of what is suspected to have been his home, built in 2006, and opened as part of the museum in 2010.

A block away, at the base of Hill Street, is the river. This is the town's front door, and the former commercial landing for ships and barges plying the rivers—the national interstate system at the time



The other side of the Welcome to Hannibal sign quotes Mark Twain: "...the extensive view up and down the river is ... one of the most beautiful on the Mississippi." CLUI photo

of Mark Twain's childhood here. Like a transubstantiating exit ramp interchange, Hill Street itself emerges directly from the river, under a sign welcoming arrivals to town.

Prone to flooding in the past, and even still, the town is protected by a levee pierced by three streets connecting downtown to the waterfront, including Hill Street (no doubt named after the topographic feature that helps explain why the old town was established here). Removable steel gates are stored nearby to drop into slots where the roads pass through the levee. When in place, they cut off the town from the river that gave it life.



Floodgates in the levee at the base of Hill Street, open . . .

CLUI photo



. . . and closed.

CLUI photo

A great view of the town can be had from atop a bluff at Lover's Leap. Many communities have a Lover's Leap, a high place where heart-broken romantics can end their sorrows. Mark Twain in his *Life on the Mississippi* said there were fifty such places along the river, all of them associated with tragic Indian legends.



Lovers Leap, looking up river, towards town.

CLUI photo

ON THE MISSISSIPPI



Lover's Leap looking down river.

CLUI photo

While it is unknown if any lovers leapt off this one, there is a plaque in the bushes that describes the tragic disappearance of three local boys lost around here, somewhere, in 1967. They were never found, nor were their remains. It is suspected that they might have succumbed while exploring one of the many natural caverns in the region.



Gift shop and entrance to the Mark Twain Cave.

CLUI photo

Just south of town is a limestone region riddled with underground caverns. One, now called the Mark Twain Cave, is a place well known to the residents of the town and to a young Samuel Clemens, who wrote about caves extensively in the *Adventures of Tom Sawyer*, and other tales of his. Real stories about this cave include how a local doctor, who owned the cave in the 1840s, did experiments on preserving dead bodies in the cave, leaving corpses inside for years, including that of his own daughter. The cave was also used as a secret Confederate weapons stash, and as (yet another) hide-out for Jesse James, who signed his name on the cave's wall. This cave and the adjacent Cameron Cave are to some degree mapped, and are known to have hundreds of interconnected underground passages and chambers. They are part of a larger suspected network of thousands of caves under almost 30 square miles of terrain.

This limestone formation is also why one of the largest and most historic cement plants in the nation is located here as well. Operated for years by the Atlas Portland Cement Company, this was the first large cement plant built west of the Mississippi—though it is right *on* the Mississippi, which enabled its product to be shipped nearly anywhere. Cement from the plant was used in the construction of the Panama Canal, the Empire State Building, and some of the very locks and dams on the Mississippi River that helped ease the movement of the cement itself.



Entrance to the cement plant.

CLUI photo

Established in 1903, the mine and the plant grew quickly, and employed as many as 2,500 people. According to the company, it was the largest cement plant in the world. The worker's village, occupied by many immigrants from eastern and southern Europe, had a population of 3,000 at its peak. In 1921 it was absorbed by the company and became an official company town, named Ilasco, an acronym for iron, lime, alumina, silica, calcium, and oxygen, all ingredients in cement production. In 1963, the remaining residents were displaced by the company, and told to live elsewhere. The plant and mine continue to operate, though the townsite of Ilasco is now just a few empty buildings.



The memorial at the former townsite of Ilasco.

CLUI photo

Though this was after Mark Twain's time in Hannibal, he would have no doubt appreciated the bustling multicultural workers town right next door. He visited Hannibal for the last time in 1902, when the cement operation was under construction and eyeing the limestone around the cave that he loved as a child, and made famous all over the world. There is no evidence that he visited the site at that time. Though notorious labor disputes at the plant gained national attention in 1910, they started the day before he slipped into a coma and died.

A new era of industrialization had come to the interior, spreading from the cities of the northeast to Mark Twain's fictional town of St. Petersburg, the former frontier. The days of America's youth and innocence, so evocatively captured by Twain, were over, and the nation was on its way to becoming a construction of corporations, where history is often just another form of commerce. ♦

PIT STOPS

IN THE MOUNTAINS LOOKING AT HOLES



Pit Stops: Open Pit Mine Overlooks in the West was shown at Sierra Nevada College, Incline Village, Nevada, May 5-June 5, 2015. CLUI photo

THE WESTERN STATES are full of holes formed by open pit mining, and many of them are so big it is impossible for them not to be noticed by people passing through. Some of these sites confront their visibility head on, accommodating viewers by providing a place to pull off the road, and peer into their landscape void. Though that might be enough, it doesn't usually stop there.

Open pit mine overlooks generally include visitor infrastructure in the form of observation decks, interpretive plaques, suggested photo spots, viewing devices, picnic tables, heavy machinery displays, and at least one or two oversized mining truck tires. They provide a sightseer-friendly frame for these man-made Grand Canyons, dramatic landscapes carved by explosives and machines—breathtaking and lingering monuments of our ongoing industrial age.

The CLUI presented an exhibition on the subject of industrial interpretation at Sierra Nevada College, last summer. The exhibition, called *Pit Stops: Open Pit Mine Overlooks in the West* was composed of sixty images from the CLUI photo archive, selected by CLUI program manager Aurora Tang to show the way the experience of looking can be shaped and structured at these sites.

The images in the exhibit were drawn from the thousands of locations documented in the Center for Land Use Interpretation's photo archive, images taken by members of the Center over the past 20 years. They are among the most iconic images in the archive, as they show both the immensity of human constructions, and the interpretive structures built to contextualize them.

Sierra Nevada College, in the Sierra Mountains above Carson City, was considered an appropriate context for the exhibit subject, as the region is notorious for the early mining booms of the mid-1800s, which drew so many westward for the first time and accelerated the development of the West. Today, of course, few come for mines. They are considered, for the most part, footnotes, accidentally on the side of the road, and in need of interpretive enhancement. ♦

See images from *Pit Stops: Open Pit Mine Overlooks in the West* at www.clui.org.



An overlook at the Mission Mine, Sahuarita, Arizona.

CLUI photo



An overlook at the Ray Mine, Hayden, Arizona.

CLUI photo



An overlook at the Yerington Mine, Yerington, Nevada.

CLUI photo



An overlook at the Lavender Pit, Bisbee, Arizona.

CLUI photo

FANTASY AND REALTY

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Coastal New England

The coast of New England provides the historic context of colonial settlements and early industrialists' ocean-front manors that evoke the estates of England, transposed and transformed in the New World. This is where the traditional old money of America roosts, among the convoluted coast from Maine to Connecticut, and among the islands of Massachusetts.



One of the most expensive listings on the market in coastal New England: 21 Vista Drive, Greenwich, Connecticut, \$54 million. Image: Zillow

The most expensive homes on the market in New England are often found on **Nantucket**, an island off Cape Cod. Nantucket has a year-round population of 10,000, which grows to 50,000 in the summer. Tommy Hilfiger, whose fashion line evokes the affluent beach life of the island, built one of the most expensive homes on Nantucket. Entertainment celebrities, CEOs, and politicians, like John Kerry, have homes here too.

A close second for the most expensive real estate market in New England is the adjacent island of Martha's Vineyard. The Vineyard is a political and celebrity playground, frequented by the Kennedys, Clintons, and Obamas, and where politically connected celebrities like James Taylor have summered for decades. It is larger and more touristed than Nantucket, and usually has fewer homes exceeding \$10 million on the market, though properties exceeding \$100 million have sold on the Vineyard in the past.

Newport, a town on a peninsula in coastal Rhode Island, is famous for its Gilded Age seasonal mansions (called cottages at the time), built by the barons of New York and Boston, like the Vanderbilts and Astors, and where the architects that built the mansions, including Charles McKim, Stanford White, and H. H. Richardson, also had homes. Though some of the mansions of Newport have been turned into museums and schools, many remain in private hands, and are among the most conspicuous displays of large living in the nation. The scale and pedigree of these homes continues to support a robust real estate market, where one of the most expensive homes for sale is actually not a Gilded Age palace, but a house built in 2009, with an asking price of \$45 million, and a relatively modest 7,698 square feet of space. Perhaps that is why it has been listed for more than two years, despite its 45-acre seafront lot.

Greenwich is the closest Connecticut community to New York City, less than 40 minutes by train to Grand Central Station. Like the London borough after which it is named, the houses here tend towards the English estate style, with large lawns, classical statuary, and privacy. With its proximity to New York, and its jutting peninsulas and leafy hills, Greenwich has become one of the most affluent towns in the country. Residents have included celebrities like Ron Howard, Mary Tyler Moore, Glenn Close, Regis Philbin, and Mel Gibson, whose house on Old Mill Road was on the market a few years ago for \$39.5 million. Investment bankers, including several of the top 50 richest people in the country, have homes here, such as Ray Dalio, Thomas Peterffy, and Steve Cohen. Last year a shorefront property, Copper Beech Farm, sold for \$120 million.

Just over the town line is Westchester County in New York, where the Clintons have a comparatively modest but very secure house in Chappaqua, and where dozens more billionaires have large spreads with formal gardens, including George Soros and Michael Bloomberg, who seems to have homes in all the hot spots.

New York: The Top Tier of High Living

The coast of New England provides the historic context of colonial settlements and early industrialists' ocean-front manors that evoke the estates of England, transposed and transformed in the New World. This is where the traditional old money of America roosts, among the convoluted coast from Maine to Connecticut, and among the islands of Massachusetts.



One of the most expensive listings on the market in the Hamptons: 38 Mathews Road, Wainscott, New York: \$95 million. Image: Zillow

The two big islands of New York, Manhattan and Long Island, work together to serve the needs of the cultural and financial elite of America. Manhattan, the nation's densest cluster of commerce and culture, is a complex machine for generating revenue, while the Hamptons of Long Island, a selectively social getaway for Manhattanites to spread out and let off steam, provides space to spend even more money on real estate.

The island of **Manhattan** is the most valuable cluster of residential real estate in the nation, and likely the world. Usually half of the top 25 highest priced home listings in the nation are in Manhattan, and most of them are at the top of buildings, such as the three-floor penthouse at the Pierre Hotel, recently on the market for \$125 million.

Townhouses often top the list, such as the Upper East Side mansion that sold recently for \$114 million, or the block of several adjacent townhouses bought independently, and secretly, by Russian oligarch Roman Abramovich for more than \$70 million, in order to integrate them into one of the city's largest mansions.

To list the celebrities, business owners, politicians, and Forbes listers that have homes in Manhattan would be meaningless (though celebrities buying or selling \$50 million apartments here recently include David Geffen and Steve Wynn). Since property ownership is a matter of public record, the efforts to own some of the most expensive real estate in the world anonymously leads to some fairly convoluted corporate shell games.

For some, relief from the intense urbanity of Manhattan is provided by heading a hundred miles east to the **Hamptons**, on the southern shore of the far end of Long Island, where typically more than a hundred homes are on the market for more than \$10 million.

The Hamptons are the towns of East Hampton and Southampton, which have a couple dozen villages and hamlets within them, such as Sag Harbor, Montauk, Amagansett, Bridgehampton, and Sagaponack, which is often cited as the most expensive zip code in the USA, with a median home sale price of more than \$5 million.

South of the arterial Highway 27, homes are closer to the ocean and tidal bays, and generally command the most money. Southampton's Mecox Bay, for example, where Alan Alda and Richard Gere have homes, recently featured a house on the market for \$85 million. A tidal bay in East Hampton known as Georgica Pond, where Steven Spielberg, Martha Stewart, and Kelly Klein have homes, had a house listed last year for \$140 million.

Between the two, facing the ocean, is one of the largest and most extravagant private homes in the nation. Known as Fair Field, it is a 25 bedroom, 62,000 square foot Neoclassical palace with multiple outbuildings, including a 10,000 square foot private museum for the owner's art collection, on 63 acres of ornate gardens, built in the 1990s by the industrialist investor Ira Rennert. Its value today is estimated at around \$500 million (not including the art, of course).



Fair Field's perimeter landscaping alone might suggest its owner was a major hedge fund manager, but in this case its owner, Ira Rennert, is known as a high-risk bond manager, owner of Renco, a holding company that specializes in profiting from bankruptcies of toxic industrial polluters, like the Doe Run lead company of Missouri, and the American Magnesium Company in the Great Salt Lake, from which he was able to extract more than \$100 million in the 1990s when he was building this house, and this hedge. CLUI photo

Florida: Four Seasons of Sand and Sea

The beaches of Florida have been a favored getaway from the nation's urban centers, most of which are below freezing in the winter. A strip along the southeast edge of the state, facing the Bahamas, has become most popular among those with the means to live largest—especially the region around Palm Beach and Miami Beach, where homes commanding the highest prices can be found.



One of the most expensive listings on the market in Miami Beach: 1 Star Island Drive, Miami Beach, Florida, \$40 million. Image: Zillow

Standard Oil millionaire Henry Morrison Flagler is often cited as the master developer and promoter of Florida real estate, and **Palm Beach** is the nidus of his empire. It was here that he established two luxury resort hotels, and sold lots to his social circle, which included the barons of the Gilded Age. It is also where he died in 1913 after falling down the stairs in Whitehall, his 55-room Palm Beach mansion, which is now the Flagler Museum.

Some of the most expensive real estate listings in the country have been located here over the years, such as the Ziff family's compound, a few miles south of Palm Beach, listed in 2015 for \$200 million. People who have owned homes in the Palm Beach area include many people with homes in the Hamptons, too, like Michael Bloomberg and David Koch (currently the eighth and fourth richest Americans, respectively) as well as famous performers of the past and present, like Jimmy Buffett, John Lennon, Michael Jackson, and Celine Dion, who built her fantasy home at Jupiter Island, north of Palm Beach, and put it on the market last year at \$62 million.

Radio celebrities Rush Limbaugh and Howard Stern have had homes in Palm Beach, as have many CEOs and investment bankers, like Donald Trump, Ronald Perelman, and John Sculley, as well as politicians, including the former Prime Minister of Canada, Brian Mulroney.

Like Palm Beach, a barrier island separated from the shore by the intracoastal waterway, **Miami Beach** is a strip of sand too, across from the city of Miami. Historically associated with mobsters like Al Capone and Meyer Lansky, Miami Beach was developed largely by automotive industrialists, like Harvey Firestone and Carl Graham Fisher, the legendary national road builder who helped develop the interstate system. His Dixie Highway connected Detroit to Miami Beach, its southern terminus. He made Fisher Island, at the southern tip of Miami Beach, from scratch by dredging sand from the ocean

bottom. Once an exclusive Vanderbilt family estate, home owners on Fisher Island today include celebrities Oprah Winfrey, Julia Roberts, and Mel Brooks. Carl Graham Fisher later went on to develop highways and real estate in the Hamptons.

This stretch of coast, from the chic and cosmopolitan city of Miami on Biscayne Bay, to Fort Lauderdale 25 miles north, is the other most expensive strip of land in Florida. Homes are often listed for more than \$100 million, such as the \$139 million Palais Royale in Fort Lauderdale, which has an Imax movie theater and a \$2 million staircase, and Leona Helmsley's old place in Coral Gables, on the market last year for \$67 million.

Head for the Mountains

The Rocky Mountains provide space for expansive Alpine lodges with grand views of snowcapped peaks and pine forests, and recreational fun, especially skiing in the winter (and fishing, horseback riding, and golf in the summer). The most expensive residential mountain retreat communities in the nation are Aspen, Colorado; Vail, Colorado; Jackson Hole, Wyoming; Sun Valley, Idaho; Park City, Utah; and Lake Tahoe, Nevada/California.



One of the most expensive listings on the market in Aspen: 41 Popcorn Lane, Aspen, Colorado, \$50 million. Image: Zillow

The **Sun Valley** region of Idaho includes the towns of Ketchum and Hailey. Ernest Hemingway may have made this region famous, but its ski resorts and scenic mountains sustain its popularity, and its annual media and tech mogul conference at the Lodge in Ketchum helps keep up its reputation for exclusivity. There are typically more than ten homes on the market with asking prices higher than \$10 million, but rarely for much more than \$20 million.

Jackson Hole is a valley at the base of the Grand Teton Mountains of Wyoming, and includes the towns of Jackson and Wilson. Near Yellowstone and Grand Teton National Parks, there are a few ski resorts nearby. The area usually has around a dozen homes listed for more than \$10 million, and ranch land listed for up to \$40 million. Christy Walton, a Walmart heiress and the ninth richest American (according to Forbes), has a house in the Valley, as well as Forrest Mars Jr., #16 on that richest American list. Bill Gates, #1 on the list, has a big spread near Cody, Wyoming, about 80 miles from Jackson Hole.

Vail's ski resort opened in the 1960s, and by the 1980s it was the largest ski area in the nation. Located less than two hours from Denver, Interstate 70 runs along the base of the mountain, and resorts and homes are wedged in between the slopes and the Interstate. Despite this, there are usually more than a dozen homes on the market here for more than \$10 million, especially those at the base of the ski runs, where you can ski directly to your door.



Sotheby's real estate office in downtown Aspen, across from the new contemporary art museum. CLUI photo

The mountain region with the highest value real estate listings in the nation is the adjacent ski resort communities of **Aspen/Snowmass** in Colorado. In Aspen, you can ski into the downtown grid of the former mining town, now replete with expensive shops and restaurants, and a new contemporary art museum. Also in town is the Aspen Institute, a famous political and cultural think tank, host to the annual Ideas Festival, which brings cultural, business, and political celebrities to town, and helps to give the community its upscale European élan.

Though a few billionaires have homes in town, including Charles Koch (Forbes-listed with his brother as the fourth richest American, and a major supporter of the Aspen Institute), it's the hills and dales outside of town where the real estate soars. Charles' other brother, William Koch, listed his 15-bedroom mountain home for sale last year for \$89.9 million, for example. Around 50 American billionaires are said to have homes in the region.

Park City, a former mining town an hour's drive from Salt Lake City, is now a base for two ski resorts. Though the snow is better at the more distant Alta and Snowbird, the Park City environs have more services and retail, and a quaint downtown. It is the location for the annual Sundance film festival, which helps to give the community some international flair. There are usually at least a dozen houses on the market there for \$10 million or more.

Lake Tahoe's clear water and proximity to ski areas make it a favorite mountain retreat for the affluent, especially from around the San Francisco Bay Area, less than four hours away by car. Lake Tahoe is in the Sierra Mountains and is split by the state line between California and Nevada. The most expensive homes tend to be on the Nevada shores, in communities like Incline Village and Crystal Bay, where Howard Hughes and Larry Ellison owned homes that

have since sold for more than \$20 million, and Glenbrook, which had a listing last year at \$98 million. Houses at the high end of the market can sit for a long time until finding a buyer, especially during a recession. An especially dramatic home called Tranquility, in the Nevada community of Zephyr Cove, was listed for \$100 million by its owner (a co-founder of the Tommy Hilfiger company) in 2006. It finally sold in 2013 for \$48 million.

Northern California's Temperate Mediterranean Splendor

Northern California's landscape is one of the most varied in the nation, and includes Alpine plateaus, volcanoes, rugged remote coasts, and lush river valleys. With the San Francisco Bay area as its cultural and economic anchor, many have made their fortunes here, and established their personal paradise within the Mediterranean hills and dales of the region.



One of the most expensive listings on the market in Northern California: 10 Carmel Way, Carmel, California, \$37,500,000. Image: Zillow

Napa Valley, northeast of San Francisco, is a contoured and constructed landscape of vineyards and villas, evoking the French and Italian analog that in many ways it has surpassed. Several estates are usually on the market listed for more than \$20 million, especially around the town of St. Helena. Dramatic architectural extravagances can be found tucked down private roads, often part of productive wineries. Hollywood celebrities have clustered here, most famously the director Francis Ford Coppola and actor Robin Williams, a dedicated Bay Area booster, who commissioned a winery estate for himself here in 2003, which, after his death in 2014, went on the market for \$25.9 million.

Tiburon is a peninsula jutting into San Francisco Bay across from Sausalito that is often cited as one of the most affluent zip codes in the nation. Its steep hills enable homes to see over one another, providing many opportunities for dramatic views across the bay and the scenic skyline of San Francisco. Tiburon is a favored community for executives from Bay Area's prominent post-World War Two boom businesses, like Chevron and Bechtel. There are usually several listings above \$10 million on the small and dense peninsula (which includes the town of Belvedere) and listings as high as \$50 million have appeared over the last year.

Woodside is a town that spans the hills behind Silicon Valley, nearly to the Pacific Coast, south of Half Moon Bay. Its relatively

open hillsides provide space for large estates for magnates from the railroad days to the present tech boom. In one example, Steve Jobs bought an estate originally built by the copper mining pioneer Daniel Jackling. Investor Charles Schwab has a home here, as does Oracle's Larry Ellison. Singer Neil Young has lived here for decades. Homes often list for over \$40 million. Atherton, an adjacent town mostly in the valley, is currently the third most affluent zip code in the country, and usually has a dozen house listings over \$10 million. Google founder Sergey Brin has a comparatively modest house in the Palo Alto Hills, while Larry Page, his Google partner, lives in the leafy grid of Old Palo Alto, a block away from Steve and Laurene Jobs' primary residence.

Once famous as an artist colony, occupied by photographers Ansel Adams and Edward Weston, and writers Robinson Jeffers, Robert Louis Stevenson, Jack London, and Sinclair Lewis, **Carmel**, on the Monterey Peninsula north of Big Sur, is among the fanciest towns in the nation. Carmel usually has several listings over \$10 million, and a few over \$20 million near the famous golf courses at Pebble Beach, one of seven golf courses on the peninsula. The town of Carmel-by-the-Sea, where longtime resident and actor Clint Eastwood served as mayor for a time, is a grid of hundreds of small residential lots each with an average value around \$2 million.

Southern California: Sunset in Paradise

With its views of the setting sun into the Pacific Ocean, and ocean air keeping the temperature within reason, the coast of Southern California is, for many, paradise. Nearly everyone who can afford to live anywhere has a home here.



One of the most expensive listings on the market in Southern California: 10236 Charing Cross Road, Los Angeles, California (AKA the Playboy Mansion), \$200 million. Image: The Agency

Southern California's coastal affluence begins at **Santa Barbara**, whose hinterlands include Michael Jackson's Neverland and Ronald Reagan's Rancho del Cielo. The Spanish Colonial Revival town of Santa Barbara and its unincorporated communities along its coast, like Montecito, typically have dozens of properties listed for over \$10 million, with some over \$100 million. The list of famous residents, past and present, is long, and includes Oprah Winfrey, Jennifer Aniston, Jeff Bridges, Julia Child, Warren Christopher, Tom Cruise, Robert Duvall, Jane Fonda, Martha Graham, Jennifer Lopez, Dennis Miller, Steven Spielberg, and Warren Zevon.



Neverland Ranch, Michael Jackson's notorious spread outside Santa Barbara, is on the market for \$100 million. CLUI photo

Malibu is a narrow strip of a town along 21 miles of coast between Oxnard and Santa Monica, with an official population of 12,500 people. Whether officially declared as residents or not, the number of celebrities and Forbes 500 listers who have oceanfront homes here is rivaled only by the Hamptons. Oracle's Larry Ellison owns at least nine homes along Carbon Beach in Malibu, in a section known as Billionaire's Beach. David Geffen's house, famous for blocking beach access, and for being lampooned in Doonesbury comic strips, was put on the market in June of 2015 for \$100 million.

The hills along the northwestern edge of Los Angeles, from Pacific Palisades to Hollywood, an area around 12 miles long and 3 miles wide (roughly the size and shape of Manhattan), contains more large, expensive, and infamous domiciles than anywhere in the world. From Brentwood, west of the 405 Freeway, eastward to the 101 Freeway at Universal City, the windy roads sprawl into the hills through a battery of north-south canyons, through the communities of **Bel-Air**, **Beverly Crest**, **Beverly Hills**, and the **Hollywood Hills**. Along the base is Sunset Boulevard, and on top, Mulholland Drive. Though house prices have surpassed \$200 million before, one developer, Nile Niami, is currently building a 100,000 square foot hilltop house in Bel Air that is expected to be listed at \$500 million, more than twice what any house has ever sold for in the USA.

Affluence continues down the coast of California south of Los Angeles, where the most consistent and pleasant weather in the nation can be found. The Orange County community of **Newport**, with its manufactured peninsulas and islands, where you can park your yacht outside your house, usually has a dozen houses on the market for more than \$10 million, and even more can be found further south at **Laguna Beach**, where a few homes are usually on the market for \$20 million or more. The nation's second wealthiest person, Warren Buffett, once had a second home in Laguna Beach. He sold it in 2006, and now the only residence he owns is in Omaha, Nebraska, which he bought in 1958 for \$31,500.

The adjacent San Diego County communities of Del Mar, Rancho Santa Fe, and La Jolla, north of the city of San Diego, make up the most expensive part of the county, where listings for more than \$10 and \$20 million are frequently found. **Rancho Santa Fe** is inland a few miles, but still commands high values for large compounds with coastal views, or not. It became famous for the Heaven's Gate cult's mass suicide in a mansion there in 1997. **Del Mar** is the coastal

area next to Rancho Santa Fe, separated from La Jolla by the Torrey Pines Golf Course. The hilly shores of La Jolla are more "old money" California, where Theodor Geisel (Dr. Seuss) lived, and where Raymond Chandler retired, once he was done with Los Angeles.

What about Hawaii?

2,500 miles beyond the sunsets of California's coast is the ultimate Pacific paradise—Hawaii. Many of the people who could live anywhere have a home here, though they may be too busy to be there much.



One of the most expensive listings on the market in Hawaii: 4200 Anini Vista Drive, Princeville, Hawaii, \$38 million. Image: Zillow

On the big island (Hawaii), the adjacent communities of **Kamuela** and **Kailua Kona**, where Michael Dell and Paul Allen have homes, are the most expensive, with a dozen homes currently on the market for \$10 million or more. Homes near Honolulu and Kailua, on Oahu, and on Kauai, can be similarly priced. The same is true in the community of **Lahaina**, on the island of Maui, where many Hollywood celebrities have homes, including Oprah Winfrey.

Tech giant Oracle's founder and CEO, Larry Ellison, perhaps the largest collector of high-end real estate in the nation, recently bought 141 square miles of the island of Lanai, a former pineapple plantation island off the west shore of Maui—98% of the entire island—for an estimated \$600 million. The part of the island he wasn't able to buy is the town in the middle of the island, where Lanai's 3,000 residents live. ♦



The subject of the high-end residential real estate market was covered in *Fantasy and Realty: Homing in on the American Dream*, on exhibit at CLUI Los Angeles from September 2 to December 13, 2015. The exhibit space was turned into a kind of real-estate office, where listings for the most expensive homes in the nation were displayed alongwithinterepretivete xt. CLUI photo

AMERICAN GOLFSCAPE

SOME NOTABLE COURSES ACROSS THE NATION

GOLF IS HISTORICALLY epicentered at the Royal and Ancient Golf Club of St Andrews, Fife, Scotland, where the Old Course there dates back to the 15th century. When the sport crossed the pond in the 1700s, some early clubs were formed in New York and Charleston, South Carolina, but it developed more quickly in eastern Canada, where the Royal Montreal Golf Club, founded in 1873, is said to be the oldest surviving golf club in North America. By the 1880s, golf was becoming established by the establishment in the USA, especially at country clubs around New York City and Chicago. National trade associations and tournament organizations formed and set standards for courses and rules for the game. Chief among them is the United States Golf Association, whose membership today includes more than 10,000 of the 17,000 active courses in the country. What follows is a sampling of some of the more historic and otherwise notable golf courses in the USA.

See an online map of the American Golfscape at www.clui.org.

Pebble Beach Golf Links, Pebble Beach, CA

This may be one of the best golf courses in the country for scenic beauty and adventure, with nine of its holes on rocky bluffs on the ocean. Also notable because unlike most of the exotic courses in the country, it is not a private club, but is open to the public, albeit at a cost—around \$500 for a round. It is not a municipal course, but owned by a private company, the Pebble Beach Company, which owns three other courses on the peninsula (the Links at Spanish Bay, Spyglass Hill, and Del Monte), and three hotels too. Five U.S. Opens have been played here.

Torrey Pines, La Jolla, CA

One of the greatest public, municipal courses in the country, Torrey Pines is built on a pine tree studded bluff above the Pacific, in La Jolla, north of San Diego. It opened in 1957 and has two 18 hole courses. There are steep cliffs along its western edge, and behind it some of the most specialized high-tech and biological research facilities in the country, including the Salk Institute, Scripps, and General Atomics.

Shadow Creek Golf Club, Las Vegas, NV

This course in the northern Las Vegas desert was built by the resort magnate Steve Wynn, and designed by Tom Fazio, one of the contemporary leaders in golf course design. Earth was bermed up around the 350-acre site to hide it from view, and a landscape of ponds, waterfalls, fountains, and gardens, including more than 20,000 trees, was created from bare desert ground, costing a reported \$60 million to construct. It opened in 1990, and was very exclusive. Two large private homes were also built into the site, surrounded by the course, including one that was owned by Steve Wynn himself. The development has since changed hands and is now owned by MGM. There are close to 100 golf courses now in the Las Vegas region.

PGA West, La Quinta, CA

The PGA West facility in La Quinta is a stadium course, like the PGA's Tournament Players Course at Sawgrass, near Jacksonville, Florida. Courses of this type are built to host tournaments, and have stands and contoured slopes on the edge of the course to accommodate more spectators than other types of courses. This is also considered a very difficult course, which limited its tournament use, initially. It is one of a few courses at the La Quinta Resort, an old desert hotel and hacienda getaway that opened in 1926. It is located in the Coachella Valley, a resort belt that extends from Palm Springs to La Quinta, and exceeds even Las Vegas and Phoenix for the most golf-intensive desert landscape in the country, with around 120 golf courses, all within one of the hottest and driest places on the continent.

Coeur d'Alene Resort Golf Course, Coeur d'Alene, ID

This course opened in 1991, on the shore of Idaho's Lake Coeur d'Alene, and is unusual for having one of its greens, the 14th hole, on a floating island, entirely separated from the shore. To finish the hole, golfers get in a wooden boat that shuttles back and forth between a slotted dock on the shore, and on the island. There are a few other resorts on this scenic lake in Northern Idaho, including the Gozzer Ranch Golf and Lake Club, with a course designed by Tom Fazio.

Pacific Dunes, Bandon, OR

The Bandon Dunes Golf Resort is on the southern Oregon coast, a landscape similar to the Scottish coast, where the sport originated. The first course opened in 1999, but it was the second course, Pacific Dunes, designed by Tom Doak, which opened two years later, that really put this place on the golf map. There are now five courses at the resort, which is known for a rustic simplicity, compared to most golf resorts. Though remote, it is a modern classic links-type course destination resort for golfers.

Sand Hills Golf Club, Nebraska

This course opened in western Nebraska, a classic of Scotland, though land in the middle of "grass and sand bunkers," discovered, they say. The at a cost much less than on existing ground, cost to construct, instead of layers of specialty bedding around \$40,000 to make for many golfers, and developed since, despite,

Some Notable Golf Courses

Desert Highlands Golf Club, Scottsdale, AZ

Most of the 420 golf courses in Arizona are private clubs, embedded in desert housing developments in cities in the Phoenix metro region, not unlike this one. Built in 1984, and designed by Jack Nicklaus, Desert Highlands is an example of a target golf-type course, which uses less land and landscaping, thus saving on water and groundskeeping outlays. This course meanders through the housing development with only 80 acres of irrigated landscaping, versus the usual 120 acres or more.

Pinehurst Resort, Pinehurst, NC

Pinehurst is an old health resort it now, including some of the praised ones. The resort was Walker Tufts of Boston, who hired a firm to lay out the village. The 1898, but it was the second one is hailed as one of the finest. Its course architect Donald Ross, who Pinehurst, and whose firm designed USA in the first half of the 20th location of the first miniature golf opened in 1916.

Old Works

Some golf landfills of Works course smelter, the mine in town, the became a planning, course, the bunkers is

Old Course, Anaconda, MT
 Golf courses, especially municipal ones, are built on other unstable, undevelopable land. The Old Course, in Anaconda, was built on the site of a copper mine Upper Works plant, which processed ore from Butte, Montana. After a new smelter opened, this old one was idled, abandoned, and ultimately a superfund waste site. In 1994, after years of ground was broken on a Jack Nicklaus-designed course around the old industrial site. The sand in the black slag and old machinery is peppered about.

Mullen, NE
 In 1994 in the rolling sand hills of this classic links style course, like the shores of the Atlantic, it is sited in the middle of the country, "nowhere." Sited in a bevy of natural beauty, this course was not so much built, as it was certainly built though, but it was mostly. The greens here were formed by cutting just a few hundred dollars each for the elaborately engineered pads, with drainage and drainage, which typically cost more. This course has become a destination for other courses in the region have been and because of, its remoteness.

Butler National Country Club, Oak Brook, IL
 This course, one of many in the office park suburbs west of Chicago, is notable for being the location where three golfers, including the champion Lee Trevino, were struck by lightning during a public tournament in 1975. Though they all lived, lightning remains a problem for golfers, as well as spectators. The course here is also notable as it surrounds a campus of the McDonalds restaurant company, including its training center known as Hamburger University. The corporate headquarters is across the highway.

Oakland Hills Country Club, Bloomfield Hills, MI
 This country club's southern course is one of the classics in the nation. It opened in 1918, and was redesigned in the late '40s by Robert Trent Jones. The club is north of Detroit, and was established by two Ford Motor Company executives. Michigan has more than a thousand golf courses, ranking third, after Florida and California. This is likely due to several factors, including the timing of the growth of the auto industry in the region with the rise in popularity of golf among the executive class.

The Country Club, Brookline, MA
 Known simply as The Country Club, this golf course in Boston's early suburbs is a short streetcar ride from the financial district and downtown. Members of this golf club were influential in establishing the United States Golf Association. The course here started forming in 1893, the same year Frederick Law Olmstead moved his landscape architecture firm into an old farmstead, a few meandering blocks away. Though his influence on golf course architecture is tremendous, he is not known for designing any courses himself.

Muirfield Village Country Club, Dublin, OH
 Legendary golfer Jack Nicklaus became an even more legendary golf course designer, developer, and brander. Though he is often, but not always, directly involved in the design, his firm has produced hundreds of courses all over the world, and more than 200 in the USA. Most are part of private housing developments, like this one, north of Columbus, Ohio, Nicklaus's hometown. He was the original developer of this property, and has worked and reworked this course many times since opening it in 1974.

Van Cortlandt Park Golf Course, New York City, NY
 This is generally considered to be the first public golf course in the USA, opening in 1895, in the North Bronx, near Yonkers. You can still take the Number One train from Times Square and play 18 holes for around \$35.

Oakmont Country Club, Oakmont, PA
 The course at Oakmont, in a suburb east of Pittsburgh, was built in 1903, and is considered a classic in "penal" design, where the course's 200 bunkers (sand traps) are hard to miss. The Pennsylvania Turnpike also divides the course in half, though no holes span the highway, and high walls keep most stray balls from leaving the course. Two golf cart bridges over the turnpike connect holes two through eight with the rest of the course.

Pine Valley Golf Club, Clementon, NJ
 One of the best loved and toughest courses in the country, Pine Valley was laid out in 1918, and catered to the city of Philadelphia. Early golf courses tended to be constructed where there was sand, such as coastal bluffs, evoking its origins in Scotland, or in this case, in the Pine Barrens of New Jersey. *Golf Magazine* has called it the best golf course in the world on several recent annual rankings.

Augusta National Golf Club, Augusta, GA
 The home of the annual Masters Tournament, one of the most important events in the sport, this course is considered by some to be the best in the world. Originally constructed in 1933 by Alister MacKenzie and Bobby Jones, the landscaping and features have been tweaked many times since by designers such as Perry Maxwell, Trent Jones, Jack Nicklaus and Tom Fazio. Despite its stature in the sport, and with a membership that includes business leaders such as Warren Buffett, Bill Gates, and Jack Welch, the club did not have any African American members until 1990, and no women until 2012, when former Secretary of State Condoleezza Rice became a member.

Greenbriar Resort, White Sulphur Springs, WV
 Golf courses are typically part of country clubs, municipal parks, housing developments, or resorts. The legendary Greenbriar Hotel in West Virginia is one of the progenitors of resort-style golf, where people come and stay, and play. There are five courses now around the Greenbriar, including Oakhurst Links, which opened in 1892, one of the oldest in the land. It is being integrated into a new housing development owned by the Greenbriar, with a new course designed by three golf legends, Jack Nicklaus, Lee Trevino, and Arnold Palmer. The hotel is also famous for its secret continuity of government bunker, outed in the 1990s, as the place for members of Congress to head to in the event of a nuclear attack on Washington, from which they might emerge presumably, eventually, and play golf.

National Golf Links of America, Southampton, NY
 This is a links-type course designed by C.B MacDonal in 1911, following the early Scottish courses built more simply on sandy bluffs. Compared to more standard courses, this style is a bit more uneven, rustic, and open, generally without trees, and built near the shore. This club is next to the Sebonak Golf Club, and the Shinnecock Hills Golf Club, another links course, and is one of more than a dozen private golf clubs in the Hamptons.

Pinehurst, NC
 With eight golf courses around it, the most innovative and highly developed in 1895 by James McAlister. Frederick Law Olmstead's first golf course was built in Pinehurst, which opened in 1907, that it was designed by the Scottish architect who was the resident golf pro at Pinehurst around 400 courses in the late 19th century. Pinehurst was also the first golf course in the country, which

Seminole Golf Club, North Palm Beach, FL
 Considered one of the country's most exclusive golf clubs, the course at Seminole is on the beach, and was designed by Donald Ross in 1929, but has been severely altered by others since then. Florida has around 1,500 golf courses, more than any other state.



Golf Courses in the USA

LOS ALAMOS ROLODEX PUBLICATION AND EXHIBIT



The Los Alamos Rolodex display, which opened on December 18, 2015 at CLUI Los Angeles, featured hundreds of business cards mounted on the wall, and four of the seven rolodexes in a vitrine in the middle of the room. CLUI photo

THE LOS ALAMOS Rolodexes continue rolling around the globe, making a stop in Los Angeles long enough to be displayed at the CLUI, and to celebrate a book, titled *Los Alamos Rolodex: Doing Business with the National Lab 1967-1978*, just published by Blast Books.

The rolodexes' journey began a few years ago, when they were discovered in a pile of old office equipment for sale at the Black Hole, a legendary surplus store in the town of Los Alamos, which sold used equipment and cast-offs from the famous national lab next door.

The rolodexes—actually “Dial-A-Card” devices, not the more famous “Rolodex” brand that came to define the genre of rotating desk top business card storage devices—contained thousands of business cards from the period of 1967 to 1978, arranged alphabetically by company name, in seven separate rolodexes. They came from some unknown office within the lab, and collectively describe the relationship between the lab and the business world that provided the goods and services to build and maintain America’s nuclear might.

Once acquired by the CLUI, the rolodexes were stored at the CLUI’s compound in Wendover, Utah, with the rest of the Center’s Atomic Archive. They soon found their way into an exhibit called *Curiosity: Art and the Pleasures of Knowing*, which traveled around Europe for more than a year. After that, the rolodexes were shown in other exhibits, and are on their way to more.

For the exhibition at the CLUI’s Los Angeles location, almost 500 cards were selected and mounted on business card shaped panels on the wall, shown in chronological order, from 1967-1978.

A public talk, held in January 2016 at the CLUI, was an informal slide show run-through of more than 100 of the cards, where the audience was encouraged to speak up with their comments and any knowledge they had about the companies or individuals associated with each of the cards.

The book features around 150 of the business cards, reproduced at actual size, with an introduction by Matthew Coolidge, the director of the CLUI. The cards were selected to show the range of business types, from janitorial supplies to advanced materials engineering, and to feature the most interesting graphics and logo designs on the cards.

The publication of the book prompted deeper research into the companies, and the individuals whose names are on the cards. In most cases, calling the phone numbers on the cards led to a recording saying the number was no longer in service. Web searches showed that the companies were often renamed or acquired. Searches of addresses on Google Streetview often found buildings in business parks, especially around Albuquerque, Denver, Los Angeles, and Silicon Valley, with different names on them now. The publication of the book also created a flurry of press attention, and resulted in cases where the children or former associates of the people on the cards have gotten in touch. Each card is a potential human interest story, and the tip of an iceberg. Or, in some cases, just the tip of an ice cube. ♦

CLUI OUT AND ABOUT EXHIBITS ON THE ROAD

SOMETIMES THE CENTER produces specialized exhibits for museums or other noncommercial display venues, or provides existing programs or content for use in thematic, curated exhibitions produced by other institutions. Over the last year, CLUI material was included in a number of exhibitions in the USA, from the urban (at Temple University, in Philadelphia), to the rural (at the Granary Art Center, in Ephraim, Utah).

Further afield, CLUI content was shown at the Kunsthau Graz, in Graz, Austria, where CLUI programs were featured as part of the exhibit *Landscapes in Motion: Filmic Perspectives on an Uncertain Tomorrow*; at the Nottingham Contemporary, in Nottingham, England, as part of *Rights of Nature: Art and Ecology in the Americas*; and at the Cultural Centre of European Space Technologies in Vitanje, Slovenia, part of an exhibition called *Icons of the Non-Visible*.

Representatives of the CLUI were invited (and able) to speak at more than a dozen conferences and university engagements over the last year, including at the College Art Association, and Cooper Union, New York City; the University of Wyoming; Washington University, St. Louis; Maryland Institute College of Art, in Baltimore; Utah State, in Logan, Utah; University of New Mexico, Albuquerque; TAAK, in Marfa, Texas; in California at UC Irvine’s Desert Studies Center at Borrego Springs, Cal Poly San Luis Obispo, UCLA, UCSD, USC, and Art Center College of Design; in Nevada at UNLV, Las Vegas, and Sierra Nevada College; and at a land arts conference in the Netherlands.

People also come to us—over the last year a few dozen classes from art, architecture, and design schools visited the CLUI’s space in Los Angeles, or our complex in Wendover, Utah, or the Desert Research Station, in Hinkley, California. The CLUI was also featured in more than a dozen interviews and reviews, in publications online and in print. ♦

CLUI ACTIVITIES

CLUI WENDOVER ... LOOKING BACKWARD



A CLUI Wendover tour group visits an abandoned aerial navigation arrow known as SFO-SLC 59 on a hilltop above Interstate 80, one of many that marked the route for air mail planes flying between Salt Lake City and San Francisco. CLUI photo

2015 WAS ANOTHER busy year at the CLUI interpretive compound at Wendover, on the edge of the Salt Flats of northwest Utah. The Wendover Residence Program continued with new residents from all over spending a few weeks or months in town to do projects on or about the region. These included the Italian architectural scholar Ludovico Centis, who researched Manhattan Project history and developed an installation proposing a new type of Cold War monument; Katie Jenkins and Parker Sutton, architects who made typological landscape displacements in the region; Marie Lorenz, an artist from New York City, who developed a boat for exploring the deep salt canals of the Bonneville Flats; Sara Jacobs, a landscape architecture graduate student exploring notions of wastelands; and Ingrid Burrington, an artist and writer from New York City, who researched communication infrastructure in the region. She also assisted Zaq Landsberg, who used the CLUI workshop to construct the Decennial Monument, which was installed to celebrate the tenth year of independence for the Republic of Zaqistan, a remote nation north of the Great Salt Lake. The duo of Leila Nadir and Cary Peppermint, from Maine and New York, are veteran off-the-gridders, and were in residence at Southbase, developing food production technologies, the final link in the habitation machine constructed by SIMPARCH. School groups that came by included classes from the University of Utah, the University of Arizona, and Chris Taylor's Land Arts of the American West class from Texas Tech.

The annual Wendover Work Party was held on Labor Day weekend this year, a change in plan that, though conceptually appropriate, and not quite as hot as the usual mid-summer fest, kept a few of the regulars away, due to impending academic commitments. Work parties were largely former residents and serial Wendover recidivists like Steve Badgett, Deborah Stratman, Dan Torop, Jen Hofer, Rob Ray, Jenny Lion, Hikmet Loe, Jed Lackritz, Philip Weil, Eric Potter, Aurora Tang, and Matthew Coolidge. Also helping out was the current resident Ingrid Burrington. Nina Elder, Erin Elder, and Nancy Zastudil, who often work and travel together, and operated the PLAND program in northern New Mexico, also pitched in this year. Thanks to you all for your (late) summer sweat! ♦

CLUI WENDOVER LOOKING FORWARD ...



More research teams will be heading out into the the Great Salt Lake Desert in 2016. CLUI photo

STARTING THIS YEAR, there will be some changes to the Center's Wendover Residence Program, including the fact that it will no longer be called a residence program.

The term was derived from the established genre of artist-in-residence programs, but since we didn't want to limit it only to people who consider themselves artists, we simply called it a residence program.

Unlike most residence programs, though, ours was not about providing a gift of time to contemplate and ruminate. It was always about action, about response. The reason it was started in Wendover in the first place was so that people could react to being there—you had to. Wendover is not a comfortable place, it's a compelling place.

We started the program at Wendover more than 20 years ago, and over time more residence programs have emerged, even in curious and remote places, to support those working in artistic and community-based fields. There are residence programs in National Parks, municipal landfills, ghost towns, working ranches, rocky coasts, sandy beaches, inner cities, abandoned iron mills, rotting boatyards, and on tiny floating islands in Indianapolis. A new residence program opened a few years ago in the sagebrush near Montello, just over the hill from Wendover.

This proliferation can be a great resource for artists, and it has further affirmed what a residence program is, and is not. We will continue to support creative projects in the region by providing logistics, workshop space, exhibit spaces, and housing, and other resources if and when we have them to offer.

Also, from now on, we will be focusing attention on specific sites to work with and specific themes to explore, starting this year with the desiccating saltscape of Gunnison Bay, one of the most compelling and repelling places on earth. ♦

More online at www.clui.org/section/working-clui-wendover.

WYOMING

A BIG EMPTY BOX FULL OF STUFF



Google maps

Wyoming is a rectangle of longitude and latitude draped over high plains and Rockies, capturing within its cartographic net more land than anything else. It's the least populated state in the USA—and that includes even tiny Rhode Island and the great big empty state of Alaska. Wind rakes its bare plains, and snow piles in deep drifts in the furrows and mountains. Ranching used to be the main thing, but Wyoming is now one of the nation's principal energy states, oil, gas, uranium, and coal—a lot of coal. Tourism is the second largest industry, but people aren't looking for mines or gas wells, they are going to the National Parks and ski resorts in the northwestern corner of the state. For most people, Wyoming is a big empty box. But somewhere has to be the emptiest state in the lower 48, and this is as good a place as any.



Forever west, at least if you are headed that way.

CLUI photo

Travel, Recreation, and the Space Between

From pioneer trails to railways to the interstate to the jet set, most of Wyoming is land traveled through. Its most famous natural landmarks and popular destinations are on either side, while in the middle is the space between.

At the northeast corner of the state is **Devils Tower**, a dramatic igneous intrusion, or volcanic plug. It was the first official National Monument

in the USA, declared to be such by President Theodore Roosevelt in 1906. Devils Tower is a cultural monument too, with tremendous significance to local natives, and has tremendous cultural significance for others too, as this was the location for the space alien landing site in the 1977 Steven Spielberg film *Close Encounters of the Third Kind*.

Across the state, in the northwest corner, like the other monumental book-end, is **Yellowstone**, the nation's first National Park. Yellowstone covers nearly 4,000 square miles and is full of geothermal vents, pools, and scenic vistas. It may indeed have been the most beautiful and surprising natural place in America, before it was tamed. The lodge at Old Faithful is the most dramatic and grand of the nearly 2,000 buildings in the park, which is not much of a wilderness anymore. The park sees around two million visitors a year, and employs up to 3,700 people at peak times in the summer. There are 310 miles of paved roads in the park, and nine separate museums and visitor centers. Despite all this, though, the southeast corner of Yellowstone is among the most remote places in the continental 48 states, meaning furthest from a settlement or road. This is Wyoming, after all.

Pretty close to the middle of the state, between here, and there, is a famous landmark on the Oregon Trail, known as **Devil's Gate**, a steep natural cut in a hill made by the Sweetwater River. Though it is public property (BLM), access to it is through the old Tom Sun Ranch, which is owned by the Mormon church, and managed as the Mormon Handcart Historic Site, part of a national network of historic Mormon locations and pilgrimage sites maintained and operated for its membership. This makes for interesting and abrupt jurisdictional appropriations and historic interpretations, expressed primarily through signage.



The Ames Pyramid, another devilish tower.

CLUI photo

In the southeast corner of the state, commemorating the railroad era, is the **Ames Pyramid**, a sixty foot tall stone block monolith, with no shortage of signage either. It was constructed in 1882 to commemorate Union Pacific railroad businessmen/politicians/brothers Oakes and Oliver Ames, as well as to restore the reputation of Union Pacific, which was tarnished when the Ames brothers were found to have been involved in several financial scandals related to the building of the railroad almost a decade prior. The tracks that ran by the monument (built at what was once the highest elevation on the transcontinental railroad) were later relocated to the south, leaving this monument, designed by the well-known Boston architect H. H. Richardson, standing alone.



Little America, not just for the little ones.

CLUI photo

In the southwest corner of the state is a monument of car travel, **Little America**, known to many for its barrage of billboards along Interstate 80. This gas station/motel/restaurant stop was the first Little America location, built in 1952, when it was US Route 30 that went through here. The creation myth of the place, as described by its founder, the developer Robert Holding, is that he, as a young rancher herding sheep in the area, got stuck overnight in a blizzard, 40 degrees below zero. He survived the night, and later imagined building a refuge here, in the remote treeless plains of southeastern Wyoming, for any travelers passing through. Since he owned the land, he did, and named it after Admiral Byrd's remote snowbound Antarctic base, Little America. Holden grew his collection of real estate and hotels, including the Little America brand, ski resorts, and the Sinclair Oil Company, into an empire that made him a billionaire a couple times over. For a while this Little America Travel Center was also known as the nation's largest gas station, with 55 pumps—Sinclair branded, of course.

A new Wyoming highway landmark, the **Southwest Wyoming Welcome Center** opened recently on Interstate 25, the road between Denver and Cheyenne. Inside are elaborate displays that explore the essence of contemporary Wyoming, including dioramas about Wyoming's assets, like prisons, ski resorts, wildlife, and mining. At the apogee of the interior interpretive trail is a canted plaque that describes the industrial park under development around the Welcome Center, and an overlook points out the Schlumberger fracking services center across the highway. The panel also acknowledges Neil McMurry, who developed gas fields and industrial parks throughout the state, including this one, and who generously provided the land for this Welcome Center, which thanks him for his generosity.

Like X and Y axes, Interstate 25 runs north/south in the eastern side of the state, while Interstate 80 runs east/west across the southern part. Interstate 80, of course, is the closest thing to a national, continental Main Street connecting the coasts, and a stretch of interstate in southeastern Wyoming, between Rawlins and Cheyenne, might be the worst part of the whole trip between New York and San Francisco. Near the continental divide, in treeless Wyoming, it is notorious for ice and blowing snow, where road accidents and closures are common in the winter. According to the Wyoming Department of Transportation, the toughest areas to keep clear are the 50 mile stretch between Walcott Junction and Dutton Creek Road, and possibly the worst of the worst part of that is Foote Creek Curve, around mile marker 271, west of Arlington.



Layers of snow fencing along the "Snow-Chi-Minh Trail" stretch of Interstate 80.

CLUI photo

But it's a lot better than it used to be, due to one of the most ubiquitous landscape features of Wyoming, the snow fence. These porous rows of tall wooden fence, rolling across the hills, are not made to block the snow, but to cut the wind, causing wind-borne snow to drop rather than to accumulate in places where it may pile on roads or cause white-out conditions or stream across the road surface forming a persistent layer of ice. Though they date back to the railroad times, it is because of modern highway travel that they spread all over the state.

While the Wyoming Department of Transportation did not invent snow fences, they understand their value as well as anyone. Studies in the 1970s along a 45 mile stretch of Interstate through this region, known at the time as the "Snow Chi Minh Trail," indicated that snow fencing can save tremendously in plowing costs, as well as save lives by significantly reducing accidents. Now snow fencing is nearly continuous and even multilayered along this I-80 corridor. While this is especially good for locals and truckers, it makes little difference to many of the visitors to Wyoming, who come to enjoy the snow at the ski resorts on the western edge of the state. They simply fly in.

Though remote and serving a small town, the **Jackson Hole Airport** is the busiest airport in Wyoming, due largely to the ski hills, and the number of private jets coming and going. It serves the resorts and recreational homes of one of the most affluent and scenic regions in the nation, at the base of the Grand Teton Mountains. Within the valley around Jackson Hole are homes belonging to many celebrities and Forbes-listers, including former Vice President Dick Cheney, billionaire John Mars, Walmart heiress Christy Walton, and the actor Harrison Ford. Famously elite finance and media mogul retreats are held at lodges in the region, where fine fishing and hunting can be had too.

One of the most famous celebrity homes in the state is the **T E Ranch**, which was the 8,000-acre ranch owned and operated by Buffalo Bill Cody. It is in the northwest part of the state, not too far from Cody, the town named after him. Buffalo Bill is such an iconic figure in western lore that many forget that he was an actual person. He started out as the real thing, a Pony Express rider, a scout, bison hunter, and Indian fighter. People started writing about him, and then, as the west became more settled, he became a showman of the Old West myth, taking an elaborate act on the road, Buffalo Bill's Wild West show, touring nationally, and then internationally. He settled in Cody in 1895 as his fame was peaking. He died in 1917, at his sister's house in Denver. The T E ranch has been sold several times since his death, and has been owned by a succession of Coca-Cola executives.

This was not the only property owned by Buffalo Bill. He had a few hundred acres at **Irma Lake**, 20 miles south of Cody, built structures there, and used it as a hunting retreat, naming the lake after one of his daughters. His modest hunting cabin is still there, along with a 15,000 square foot ranch house and several other recently added buildings. The property is remote, at the end of a seven mile private road, and has been owned since 2009 by another famous Bill—Bill Gates, the richest person in the world.



Cheyenne's history, served up on an interpretive platter.

CLUI photo

Cheyenne: Wyoming's Marginal Epicenter

Cheyenne, in the southeast corner of the state, is the largest community in Wyoming, with around 60,000 people. Casper, closer to the historic oil and gas industry in the middle of the state, is not far behind, with 56,000 people. Laramie, west of Cheyenne, is the only other community in the state with more than 30,000 people, and is nearly entirely supported by the state university there.

Cheyenne, the state capital, is perhaps the most economically diverse place in the state, and where you find the widest variety of land uses. It is also just an hour and half from Denver, commuting distance to and from the sprawl of the Front Range, which Cheyenne is sometimes even considered part of.

Like lots of places, Cheyenne is trying to brand itself as a high tech center, and a logistical crossroads for big box distribution centers. This is actually happening at one location, west of town, where a new federal computing center opened in 2012. Called the **Wyoming Supercomputing Center**, it was built to analyze and model complex environmental phenomenology as part of the National Center for Atmospheric Research, based in Boulder, Colorado. It also exists to stimulate high tech business and infrastructure at this new industrial park. Two commercial datacenters opened next door, one of which is Microsoft's.

Next to that is a major Walmart distribution center, with a large refrigerated warehouse, coupled with a CR English refrigerated trucking logistics center. Cheyenne is indeed a hub, on the fringe.

Also in town is a major satellite uplink and broadcast facility for EchoStar, one of the nation's largest satellite communication companies. The facility was built in 1994, for the Dish Network TV system, now part of the Hughes dish system, and it serves other commercial and government customers as well. The company expanded in 2011 by building a data center at the site, and Green House Data has since built a commercial data center next to that.



Dyno Nobel Cheyenne: providing blasting power to wrest Wyoming's coal from the ground.
CLUI photo

Mostly, though, Cheyenne's economy is based on government bureaucracy—military, federal, state, and local, as well as schools and hospitals. One exception is an explosives facility on the southwest fringe of town, which employs around 200 people. Dyno Nobel manufactures explosives here to serve coal mining in Wyoming, and other mining and quarrying operations around the west. The company is a major supplier of explosive services and technology for industry all over the world, but this is one of only two plants it operates in the western United States (it has a few more in the eastern US). This plant makes ammonium nitrate explosives, as well as emulsions. The company is the industrial legacy of Alfred Nobel, the inventor of dynamite, and the Nobel Prize.

The largest single employer in the state though, besides the University in Laramie, is a military base in Cheyenne, **Warren Air Force Base**. An Air Force base with no runway, Warren is one of three bases in the USA that manage the nation's fleet of land-based intercontinental ballistic missiles (ICBMs). As with the other two (North Dakota's Minot AFB, and Montana's Malmstrom AFB) Warren AFB is responsible for 150 Minuteman missiles, in 150 unmanned silos, controlled by fifteen underground manned launch control centers. 19 of the missiles under Warren's care are in southeastern Wyoming, and the rest are in adjacent Nebraska and Colorado.

Warren AFB was the first operational ICBM base, dating back to the deployment of the Atlas missile program in 1958. Though they were taken out of service in just a few years, replaced by more modern systems, the former Atlas launch sites around southeastern Wyoming remain as monolithic concrete ruins.

One of them, **Atlas Missile Base 564-A/B**, at a remote site a few miles north of Warren, is unique. It was the second operational intercontinental ballistic missile base in the country, and the first launch facility built outside of Vandenberg Air Force Base on California's coast. It housed the first generation of ICBMs, known as the Atlas D. 15 Atlas D missiles were installed at four locations in Wyoming (in addition to six at Vandenberg, and nine at Offutt AFB in Nebraska). This site was unusual also as it was a double location, with six ICBMs, instead of the usual three. Like the other sites, this one remains as an abandoned relic, with contamination in the ground that is still being assessed. The facilities here were above ground, unlike some later versions of ICBMs that had underground silos and launch control buildings.



The main entrance to Warren Air Force Base in Cheyenne, the administrative, training, and support base for clusters of ICBMs located in the region, from 1958 to today. CLUI photo

Wyoming was first and last with our nuclear deterrent in other ways too. The Peacekeeper missile, also known as the MX missile, was the most recent form of ICBM to be produced and deployed by the USA. 50 silos were outfitted, converted from older Minuteman III silos, all located in southeastern Wyoming, northeast of Cheyenne. Developed over the latter part of the Cold War, the Peacekeeper wasn't operational until 1986, and was soon the subject of treaty negotiations, cutting short its full deployment. Deactivation started in 2003 and lasted until September 2005, when the last missile was removed from **Silo P-3**. The silos are in the process of being destroyed and filled with dirt, after which they will be sold at auction. The rockets are being reused to launch satellites, and their warheads were transferred to the Minuteman III program, the only remaining active land-based ICBM system in the USA.

50 miles from Cheyenne, north of the Minuteman missile field, is **Camp Guernsey**, an 80,000-acre military training site. It is operated by the National Guard, which employs more than 1,000 full-time people in the state, and is also used by other federal, state, and local law enforcement agencies, and security and defense contractors. Most of the action occurs at the North Training Area, which can accommodate live fire, maneuvers, airdrops, convoy training, and air-ground training using helicopters and transport aircraft.

Given the low population density and wide open space in Wyoming, it is perhaps surprising that there are not more military training bases here, or at least a bombing range or two. But maybe the ICBMs were considered enough.

As further testament to Wyoming's remoteness, especially in the northern parts of the state, the federal government located one of its ten Japanese-American internment camps here, north of Cody, during World War II. Like the other relocation centers, the **Heart Mountain Internment Camp** had around 650 buildings, with 450 barracks holding as many as 10,000 people in a fenced compound covering just over a square mile of land. Several of the original structures have been preserved, and an interpretive center opened in 2011. The locations of these ten facilities, housing a total of 100,000 innocent people during the war, in places like Delta, Utah; Independence and Tule Lake, California; Poston and Gila River, Arizona, are in a sense a map of especially empty parts of the West, in more ways than one.

Wyoming: Bounty of the Ground

Though its surface can appear unadorned, Wyoming's underground is chock full of valuable dirt. In many places the landscape seems to have been turned over, dug up, then patted back down—and indeed this is often the case. And not just from coal and uranium.

Wyoming is the primary producer of bentonite in the USA, furnishing as much as 80% of the nation's output in recent years. Bentonite is a soapy clay that is used in all kinds of industries, primarily for its abilities to absorb liquids. It is a major ingredient in cat litter too. It is also a critical component in drilling mud for the oil and gas industry. Wyoming's bentonite mines are a network of small shallow surface pit operations that are scattered, but widespread in three regions in the north and northeast parts of the state. There are currently around ten bentonite operations in the state, the largest of which is probably the **BPM plant in Colony**, in the extreme northeast corner of the state. It is operated by Bentonite Performance Materials, which is a subsidiary of Halliburton.

Wyoming is also the primary source of a mineral known as trona, a form of soda ash, which is used in glass making, detergents, metals, paper, and more. Baking soda is mostly trona. Though there is a substantial operation in the California town of Trona, up to 90% of the material produced in the USA comes from four large underground mining operations and processing facilities in the southwestern corner of Wyoming. More than 3,000 people work here, extracting up to 19 million tons of the material annually. Workers extract the soft rock with tunnel boring machines, working the material left in a layer from an ancient sea bed, at levels now 800 to 2,200 feet underground.



FMC, the largest trona mine in the nation, all underground. CLUI photo

The **FMC Green River Trona Mine** is the largest of the four trona mines in the region, and likely the largest in the world. It has 2,000 miles of tunnels, most of which are 14 feet wide and 8 feet tall. The operation extracts as much as 900 tons an hour. FMC Trona started out as a joining of two separate operations, Westvaco Chemical, and Food Machinery and Chemical Co (FMC) in 1948. It was purchased by Tronox in 2015, and is the only one of the four trona operations owned by a domestic company.

The **OCI Chemical Trona Mine** is located a few miles northeast of FMC, and is the smallest in output. Even so, it is a large operation, employing 430 people and extracting 2.7 million tons annually. For years it was owned by OCI Enterprises Inc., a South Korean company. It is now owned by the Ciner Group of Istanbul, Turkey, which purchased it for \$429 million.

General Chemical has operated a trona mine for several decades, a few miles south of the FMC operation, employing around 500 people. General Chemical was bought by the Indian industrial conglomerate Tata in 2008. The fourth in the belt of trona operations is the **Solvay Trona Mine**, located south of Interstate 80, at the end of Tenneco Road. The mine's owner, Solvay, is a French and Belgian chemical conglomerate.

East of the trona mines, near the town of Rock Springs, is another large mineral processing facility, the **Simplot Rock Springs Phosphates Plant**. This large fertilizer plant produces dry fertilizer for agricultural use. It is supplied by a phosphate mine near Vernal, Utah, which delivers the ore through a 96-mile long slurry pipeline buried in the ground. The plant also uses molten sulfur, which is supplied by pipeline too, from the region's oil and gas activity. The plant is expanding, with the addition of a \$300 million ammonia plant that makes the product from natural gas, locally produced, also delivered by pipeline. Fertilizer made here is shipped to farmlands of the midwest.

The plant's owner, Simplot, is one of the nation's largest privately-held companies, an agribusiness started in Idaho by J.R. Simplot. The company is known as the inventor of the frozen french fry. Simplot operates another major phosphate plant in Pocatello, and in California's Central Valley. Fertilizer plants can explode violently, which is one reason this remote area is favored by the company. The other is the regional production and conveyance systems for minerals and gas.



The Sinclair Refinery in Sinclair, Wyoming.

CLUI photo

Oil and Gas: Old and New

Wyoming was a major source for oil and gas historically, and still is, though to a lesser degree, as domestic plays like Bakken, Marcellus, and the broad sweep of domestic fossil fuel production expanded across the country.

Historically, it was the **Salt Creek Oil Field** region that boosted the state into a major oil provider in the early 1900s. The old oil patch around there is littered with remains from the era.

A large portion of the field was set aside by the federal government to be used only in the event of a national crisis or shortage, called naval reserves, as they were established initially as fuel supplies for naval ships. This reserve site was made famous by the Teapot Dome scandal in 1922, when commercial pumping was allowed from the federal oil field here, and from ones in California, by a Secretary of the Interior who had been bribed by the oil companies that did so. The scandal involved Harry Sinclair, the founder of Wyoming's Sinclair Oil, who served six months in prison for his role, then moved back into his Manhattan mansion.

Years later the field was finally opened up to commercial use, and is now actively being pumped and undergoing environmental restoration. When it was owned by the Department of Energy and operated by Flour Daniel Inc., the field produced over 22 million barrels of oil, generating more than \$550 million for the government. It was finally sold in 2015 to the Stranded Oil Company of New York for \$45 million. A commercial oil field operations training area is on the site as well.

Sinclair Oil, a distinctive brand, with (suitably) a dinosaur on its logo, is known as Wyoming's oil and gasoline company. It has around 2,700 gas stations in the USA, though most of its gas is produced by other companies, like ARCO. There are two Sinclair refineries still operating in the state, one near Casper, and another in Sinclair, a small company town in southern Wyoming named after the company. This refinery has a capacity of 85,000 barrels per day, a medium-small one by national standards, but the largest of the four major refineries still operating in the state.

There used to be three refineries in Casper, a region that was once the heart of Wyoming's oil production. One of them, owned by Texaco, closed in 1982. Clean-up and redevelopment of the site has been slow. The Sierra Club and others have claimed that arsenic, benzene, and ammonia (just to name a few of the dangerous substances cited) were buried in unlined pits next to the refinery, and that millions of pounds of contaminants were released into the river and groundwater every year that the plant was in operation.



The Holly/Frontier refinery in Cheyenne.

CLUI photo

A refinery in Cheyenne has the capacity of processing around 50,000 barrels per day, which makes it the second largest in the state. It is operated by the Holly/Frontier Corporation, and primarily produces gasoline for local markets. Little America operates a 25,000 barrel per day refinery in Evansville, and Black Elk Refining operates a 14,000 barrel per day refinery in Newcastle. Additionally there is a 3,800 barrel per day refinery in Douglas, and a 3,000 barrel per day refinery in Evanston. These are tiny compared to the 500,000 barrels per day produced by the nation's largest refineries. But Wyoming's oil is famously independent, and small scale.

In point of fact, the state is the home of the **C and H Refinery**, in the eastern Wyoming town of Lusk, which was recently listed in the Guinness Book as the world's smallest functioning oil refinery. It uses the old thermal distilling methods, not the catalytic cracking of modern refineries, and dates back to the early 1900s. C and H was restored to working condition by a private individual, Zahir Khalid, who bought it in 1998, for historic more than economic reasons. Its capacity is just a few barrels per day.



The closed Gift Tank lurking in the bushes at the Accidental Oil Well Site. CLUI photo

North of Lusk, on the edge of the Black Hills, is another curious Wyoming oil location, the **Accidental Oil Well**. The site was operated as a tourist attraction starting in 1970. The primary draw was a hand dug 24 foot deep oil well, an excavated underground cavity that visitors could walk into through a lighted tunnel, and admire from a 58 foot long viewing gallery. Topside was a pump with a crank so people could pump oil out by hand. There was also old oilfield equipment on display, and a 10,000 barrel metal oil tank, which was turned into a gift shop called the Gift Tank, with paneled walls and chandeliers. A unique attempt at oil tourism, the facility closed some years ago, and is abandoned.

Gas and oil are often found together, and gas, it seems, is nearly everywhere. But still, certain parts of the country have more than others. In Wyoming, it's the southwestern part of the state that has the most gas production, in fields like Pinedale and Jonah. The region is peppered with thousands of well sites, with tanks for storage and preliminary gas separation, connected by pipelines, that converge at dozens of processing plants, large and small, from which the gas feeds into larger pipelines that take it to be consumed in industrial plants and cities.

Exxon operates one of the largest gas processing plants in the state, the **Shute Creek Gas Plant** at the La Barge Gas Field in western Wyoming. As a result of the separation process, helium is also produced, and this plant is one of the major sources for that gas in the US. The facility also has a carbon dioxide capture plant that was called the world's largest by the company in 2010.

There are more than a hundred sizable gas processing plants in the state, including some large ones around the town of Opal. Opal is a hub for interstate gas pipelines converging on the western end of the state, and following the right of ways like the railway and old Highway 30. Because of this, Opal has become a gas trading hub, and has a new underground gas storage facility. It is a tiny remote town, north of the highway services settlement at Little America, with its battery of gasoline pumps.



The Black Thunder Mine, usually ranked as the first or second largest coal mine in the country. CLUI photo

The Powder River Basin: Wyoming's Kingdom of Coal

Nearly half of the electricity in the USA is generated from coal, and Wyoming produces nearly half of all the coal mined in the USA. This is why Wyoming is considered a leading energy state. Nearly all the coal comes from the Powder River Basin in eastern Wyoming, where eight of the ten largest coal mines in the nation are located. Coal is shipped by rail to power plants all over the country, in more than 30 states.

A few mines in the region compete for the title of largest, based on the volumes of coal they produce, usually more than a hundred million tons per year. The **North Antelope Rochelle Mine** currently holds the title, selling 118 million tons in 2014, ten percent of the US coal supply. Like the others, this mine nearly doubled in size when it merged with an adjacent one. It employs around 1,300 people. The mine is owned and operated by Peabody Energy, which operates two other large Powder River Basin mines, Caballo (8 million tons per year), and Rawhide (15 million tons per year).

For years the **Black Thunder Mine** was the world's largest single coal-mining complex, until it was surpassed by the nearby North Antelope Rochelle mine. It is now the second largest coal mine in the nation. In total, more than 2.2 billion tons of coal have been mined since 1977. Black Thunder is operated by Arch Coal, which bought out ARCO's Thunder Basin Coal Company in 1998.

The **Cordero and Caballo Rojo mines** were merged in 1997 to create the third largest coal mine in the United States. Initially operated by Rio Tinto Energy America, the mine was purchased by Cloud Peak Energy in 2010. The operation spans 6,500 acres of Bureau of Land Management land, estimated to contain around 350 million more tons of coal. The extraction rate varies between 30 and 40 million tons per year.

Some of the coal mines in Wyoming were developed to provide coal for local power production, like the **Jim Bridger Power Plant** in southwest Wyoming. One of the largest coal-fired power plants in the nation, this remote plant was built at its primary coal source, the Jim Bridger Mine. A 2.5 mile long conveyor brings coal to the plant, whose four units produce 2,120 megawatts, much of which goes to power nearby Idaho. It burns up to 9 million tons of coal per year, around a third of which now comes from other mines. Though the mine here



The Jim Bridger Power Plant.

CLUI photo

was an open pit strip mine for decades, most of the coal comes from underground operations on site now. Water to cool the plant and make steam, has to be piped in from the Green River, more than 50 miles away. The plant is operated by PacifiCorp, and employs around 350 people.

The **Dave Johnson Power Plant** is a coal-fired power plant built in 1958, and expanded with more units, now producing 800 megawatts. It was fueled by an adjacent mine until it was depleted and closed in 2000. The plant receives coal from mines in Wyoming's Powder River Basin and is operated by PacifiCorp, a subsidiary of MidAmerican Energy, which in turn is owned by Berkshire Hathaway.

The **Wyodak complex**, located in the Powder River Basin, has three separate plants that produce electricity from coal. One of them, the Wyodak plant, is one of the largest air-cooled power plants in the nation (generating around 350 megawatts). Also on site are the Neil Simpson and Wygen power plants, which together generate another 500 megawatts. The plants use coal from the Wyodak mine, located on the other side of the interstate. Wyodak was the first major coal mine of the Powder River Basin, opening in the 1920s, making it likely the oldest operating surface coal mine in the US.



The closed gate to the post-uranium landscape at the Pathfinder Mine. CLUI photo

Uranium Mining: Not Gone, Nor Forgotten

Uranium was big in Wyoming, from the 1950s to the 1980s, and its effect on the landscape continues, due to the long process of remedial action and radiological decay. While the domestic market for uranium is severely diminished, with cheaper ore coming from Russia, Canada,

and Australia, Wyoming has the largest uranium ore reserves in the nation, so the industry is likely to linger for some time to come.

Jeffery City, northwest of Rawlins, was a sizable community of a few thousand people during the uranium boom times of the 1950s to 1970s, with mills and mines operating north and south of town. Today there are less than 100 people in town, and the mine sites have been closed or idled. The **Sweetwater Uranium Mill**, associated with the Green Mountain mines south of Jeffery City, remains on standby. The operation, owned by Kennecott Uranium Company, opened in 1981, but ceased just two years later. This is a conventional mill, meaning it processes ore that is mechanically extracted from a pit or underground mine. There are less than a dozen of this type of mill in close to operating condition in the USA, and usually just one or two that are actively producing uranium. A more common method for collecting uranium today is by flushing water through ore-bearing rock through a series of wells and even old underground mines, and extracting the uranium in a wet extraction process known as in-situ recovery.

The **Smith Ranch Highland Mill**, northeast of Casper, is this type of plant, and is one of the largest active uranium mining and production operations in the USA. The mill, also referred to as the Central Processing Plant, processes liquid that has been concentrated and collected from wells through the region. The operation started in 1987, and has expanded since then, now comprising several satellite sites, where liquids are delivered to the plant through pipelines and by tanker trucks. Waste material is injected 10,000 feet into the ground. It is operated by Power Resources Inc., a subsidiary of the Canadian uranium company Cameco.

Shirley Basin was one of five or so uranium mining districts in Wyoming, with production in underground and open pit mines beginning in 1960. In 1961, a mine here was the first to develop in-situ leach mining for uranium. Today the mines in the basin are closed, the landscape recontoured, with some tailings and processing facilities bulldozed into cells and capped against erosion. A former community that supported operations is now empty, reduced to slabs and empty swing sets.

The **Gas Hills East Disposal Cell**, located in a major uranium mining area in central Wyoming, is a former uranium operation that was closed and capped according to federal guidelines, creating a new landmass more than a mile long. Umetco, the uranium mining company that operated the mill at the site from 1960 to 1985, demolished the mill and buried tailings here, along with tailings from another mill at Riverton. Reclamation of the site was mostly completed in 2006, though monitoring continues indefinitely.

The **Spook Uranium Disposal Cell**, in the Powder River Basin, is another uranium mine closure site, but a bit different than most. The cell was built to contain the wastes from a uranium processing mill that operated here from 1962 to 1965. Instead of making a mound and capping it with coarse-crushed rock to protect the mound from erosion, which is typical, the 315,000 cubic yards of radioactive soil and debris from the mill was placed in the bottom of an adjacent open pit uranium mine, which was then filled with material to the pre-mining surface contour. The visual effects of mining were removed, even if the invisible effects may persist for millennia. ♦

See Wyoming sites on the CLUI Land Use Database at www.clui.org/ludb/state/WY.

BOOK REVIEWS

BOOKS NEW TO THE SHELVES OF THE CLUI LIBRARY

Rust: The Longest War, by Jonathan Waldman, 2015

A book about corrosion, from a number of different perspectives and case studies, including the complicated preservation issues related to the Statue of Liberty, to a photographer who sneaks into the rusting hulk of Bethlehem Steel to document the aesthetics of the minutiae of decay (Alysha Eve Csuk). Perhaps the best chapter is about the beverage canning industry, dominated by the Ball Corporation, and the complexity of engineering the chemistry of the plastic coating inside the can to match the reactivity of the drink, and visa versa. A curious case of the chicken versus the eggshell.

Edges of the Experiment: The Making of the American Landscape, by Marie-José Jongerius/Hans Gremmen, editor, 2015

This is an epic book, and a unique animal, in two volumes, in a box. One is full of essays, cultural analysis, graphics, historic maps, images, and information—a nearly psychedelic encyclopedia of current notions about the landscape of the western USA, touching on important things like Captain Beefheart, California City, early road signage, cactus cell towers, the Hoover Dam, Chinatown, and a lot in between. The other volume is mostly photo-based (the photos of Marie-José Jongerius), serving as a kind of forensic depiction and description of the places and points addressed in the other volume. It's all over the place, just like the West that is its subject.

Reluctant Genius: The Passionate Life and Inventive Mind of Alexander Graham Bell, by Charlotte Gray, 2006

The inventor of the telephone's life is surprising. He spent much of the first half of his life helping deaf people communicate (his mother and his wife were deaf), and he was a professor of vocal physiology and elocution at Boston University. Though he spent a lot of time in Washington DC, defending his patents, it was primarily his father-in-law who provided the resources, social connections, and legal savvy to maintain the business that would eventually become the largest company in the world. Bell also helped to establish the modern National Geographic society with his father-in-law, and Bell appointed his son-in-law as the first editor of the new magazine. Bell spent the latter half of his life at his estate on the shore of Bras d'Or Lake, in Nova Scotia with his family and friends helping on numerous inventions and projects, including building massive tetrahedral kites, airplanes, hydrofoils (including the world's fastest boat), and doing genetic experiments on his flock of sheep.

Smithson in Texas, edited by Elyse Goldberg, 2015

This thin hardcover catalog of the recent exhibition curated by Leigh Arnold and Jeffrey Grove at the Dallas Museum of Art describes the artist Robert Smithson's projects in Texas, including *Amarillo Ramp*, Dallas Airport sculpture drawings, some proposals for projects in a quarry near Dallas, and a most remarkable series of proposals for sculptures and films related to mined sulphur, the biblical brimstone. Texas was a state he spent a lot of time thinking about and working in, right up to the very last second of his life, when his airplane crashed into the unforgiving ground of the Panhandle. The fact that he was not able to execute any of these projects physically seems of little consequence.

Hippie Modernism: The Struggle for Utopia, Walker Art Center, 2015

Hippie Modernism is a great, big show at the Walker, curated by Andrew Blauvelt, about architecture and design of the 1960s and 1970s, and the catalog, full of essays, images, and illustrations, rivals some of the classic tomes of its subject, like the *Whole Earth Catalog*, *Shelter*, etc. On its cover is that classic aerial image of the giant Buckysphere from Expo 67, the 1967 World's Fair in Montreal, on fire in 1976, its plastic sheathing sublimating into a thick black toxic plume rising into the sky.

The Undersea Network, by Nicole Starosielski, 2015

A study of the undersea cables that house 99% of the internet traffic of the world. A reminder that the Pacific Islands, like Guam and Hawaii, are not just historically and militaristically important to the USA, but are critical as hubs in the communication networks of the world. More of a cultural study than a technical one, the book is published along with an online feature which includes more information, and images of monuments at cable landing sites around the world (www.surfacing.in), supplementing the illustrative information provided a few years ago by www.telegeography.com.

War Plan Red: The United States' Secret Plan to Invade Canada and Canada's Secret Plan to Invade the United States, by Kevin Lippert, 2015

A summary of some of the actual and potential disputes between the otherwise friendly neighbors, Canada and the USA. Like so many of the specific and illuminating publications produced over the years by Princeton Architectural Press, this is a succinct and compact volume, written, actually, by the founder of Princeton Architectural Press.

Concrete Mushroom: Reusing Albania's 750,000 Abandoned Bunkers, by Elian Stefa and Gyler Mydyti, 2012

This brilliant and bilingual book is just one manifestation of a vast and ambitious initiative to involve the public in a national civic effort to map, catalog, embrace, and integrate these brutalist defensive structure relics which litter the Albanian landscape. It's a post-typological cultural project that transforms these found objects, created by the state, into objects of individualistic value. The authors chronicle and compel the effort to convert these militaristic lemons into lemonade stands, so to speak.

Drawn to Landscape: The Pioneering Work of J. B. Jackson, edited by Janet Mendelsohn and Chris Wilson, 2015

The legend of J.B. Jackson continues with this bigish book published by the invaluable George Thompson, formerly of the Center for American Places. The book is maybe the best yet on this pioneer of landscape studies, and includes a DVD with both of the two PBS-style docs made about Jackson in the 1980s, one framing him within a Cambridge context, and the other in a Berkeley one (he taught at Harvard and UC Berkeley, and his legacy is still divided along these lines, to some degree). The book shows and discusses his drawings, watercolors, photographic slides, and the influence of *Landscape Magazine*, which he published for years, but ceased publication in 1994 (and whose future is in the hands of photographer Peter Goin's Black Rock Institute in Reno).

A Prehistory of the Cloud, by Tung-Hi Hu, 2015

An academic musing on the origins and significance of the invisible internet, with some insightful moments, including a discussion about the 1961 microwave tower bombing around Wendover.

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Phoenix Country Club, Phoenix, Arizona.

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