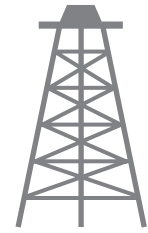




Pacific Petroleum Geology

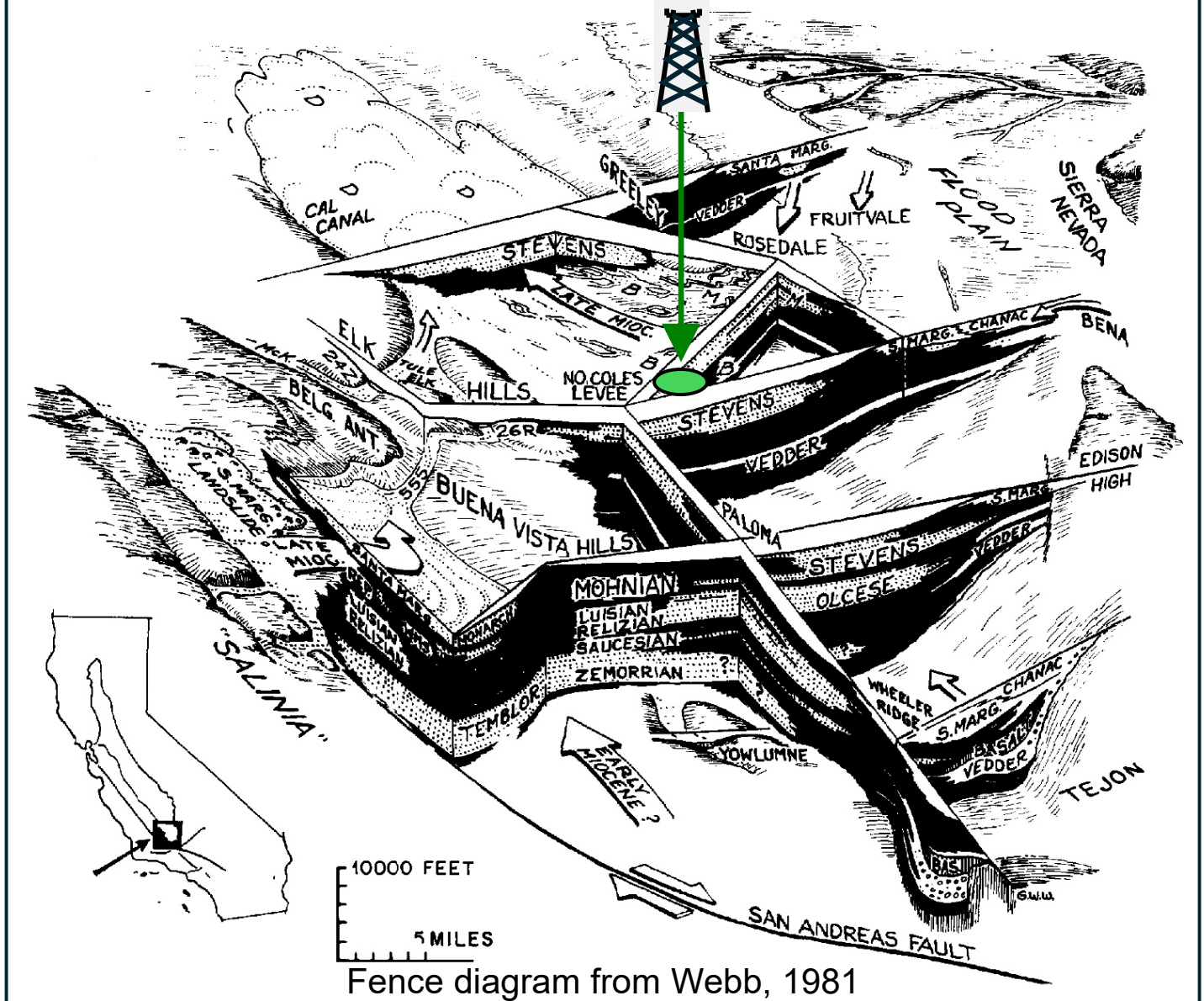


NEWSLETTER

Pacific Section • American Association of Petroleum Geologists

November and December 2024

Ten Section Stevens Sand Discovery



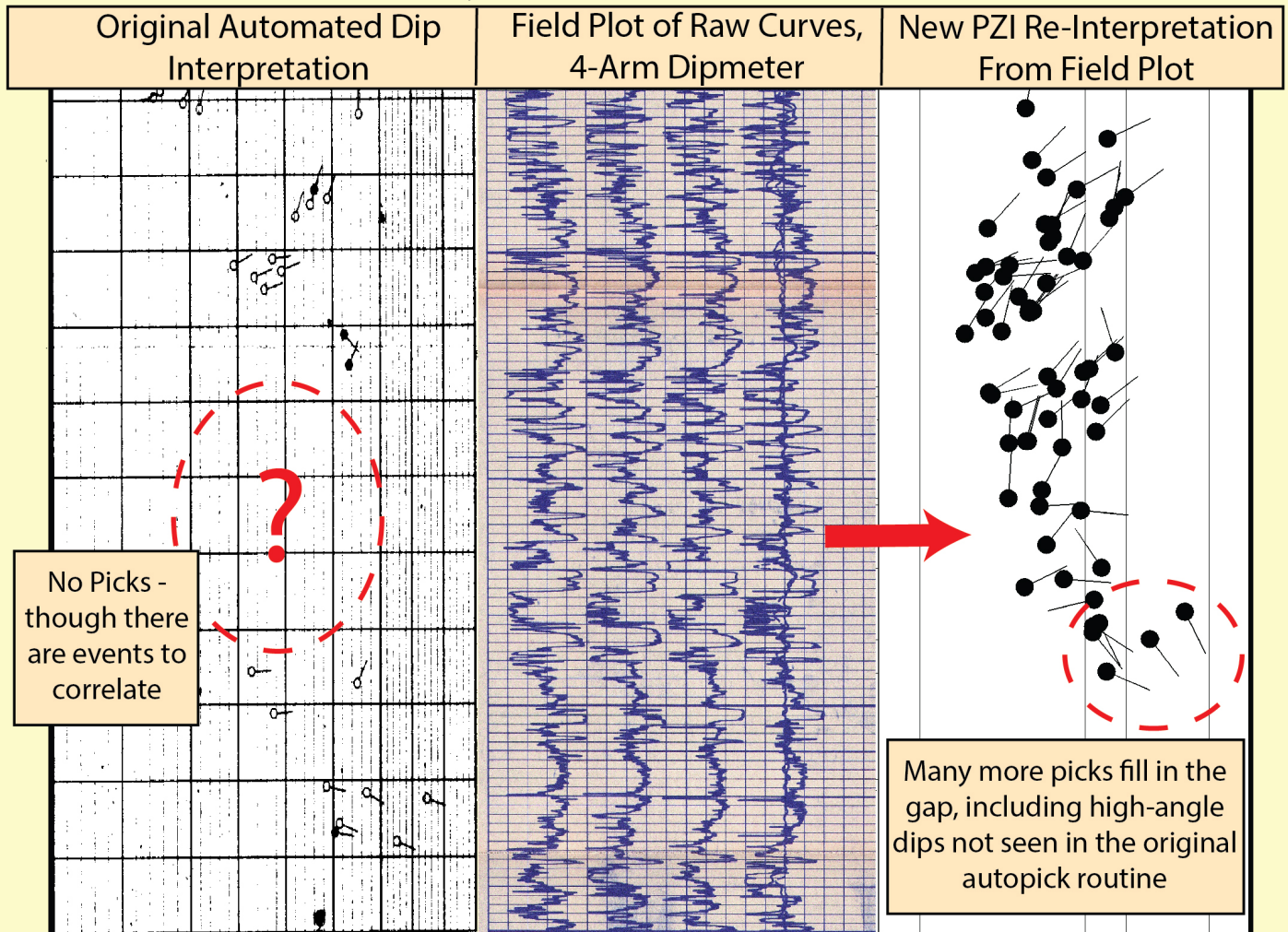
Fence diagram from Webb, 1981

See article by Dan Steward, page 6

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Editor’s Comments: Gregory Webb’s combined fence and physiographic diagram of the Stevens and other Miocene deep-water sandstones remains one of the classic illustrations of the southern San Joaquin basin geology. A draft diagram appeared in the 1977 PSAAPG guidebook, while his final drawing was published in the AAPG Bulletin in 1981.

Submit an Article to the Pacific Petroleum Newsletter!

- CONTACT THE EDITOR at editor@PSAAPG.org
- Images (graphics, photos, and scans) must be at least 300 dpi resolution. Text should be at least 600 dpi.
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Dear Pacific Section AAPG Members,

Through the hustle and bustle of the end of the year noise, I often find myself reflecting on everything that has happened over the past year. More recently, I have started writing some of these thoughts down, checking in on how I am doing both personally and how my work/career is going. As I reflected on my career this past year, I realized there is a LOT going on in our section, industry, and discipline.

So, I need to ask, how are YOU doing?

There have been a lot of changes this year, with company mergers, downsizing, and natural attrition, and in part due to new regulations taking effect in California. Many colleagues and friends have transitioned jobs, companies, industries, or even decided to retire or take a leave this year. Most recently, Alaska's geophysical organization, the Geophysical Society of Alaska, announced their decision to shut down the organization. Please know you are not alone if you have been faced with the stress of job insecurity, layoffs, career changes, or other changes to your position. Your work experience, credentials and degrees are valuable, and there are resources to help.

At the national level, AAPG has had a stellar line up of webinars this fall, ranging in topics from AI and machine learning applications for exploration, geologic hydrogen, geothermal, microplastics, and orphan and idle well management. I hope you have been able to take advantage of these free and valuable resources. The distinguished lecturer series is also currently being rolled out with a rock star list of speakers, including Lesli Wood from Colorado School of Mines, and Geoffery Ellis from the USGS to name a few. If you can't attend a live webinar, don't worry! All webinars are recorded, and the recording is emailed directly to you if you are registered. Alternatively, you can find the recordings under resources and "videos" on aapg.com. Don't forget to log in for the maximum benefits of your AAPG membership.

I am very excited to announce that the Energy Conference Network has chosen Bakersfield as the next location for the Orphan and Idle Wells conference series. I attended this conference in Houston in October. I thought it was excellent and urged the organizers to consider California for the next location. It was not only an incredible networking and multi-disciplinary experience, but also eye-opening to the opportunity in this space. Yes, you read that right, opportunity. California has around 40,000 orphaned and idle wells. That number alone should convey the amount of work to be done, but what's the opportunity for geoscientists? Remediation and restoration? Yes, that's one area. Permitting? Yes, that's another, and many of us in California already work on this aspect. But what about decommissioning, marginal and idle well management, proper zonal isolation and design, aquifer protection, and minerals and resources left in place. Who better to provide the subsurface framework for decommissioning and abandonment plans than the geologist who worked on the development and base management of the field in the first place? It is critical that subsurface geoscientists are involved in these projects. Then there is the opportunity for repurposing idle wells. This is an exciting topic as it provides a second life for some wells, while potentially addressing energy

needs domestically. Many of these projects will require a detailed understanding of the subsurface lithology, structure, and fluids.

Decommissioning and energy storage are not the only areas of opportunity for petroleum geoscientists in the Pacific Section, though. Other areas of opportunity include carbon capture and sequestration, which has seen a lot of interest in the San Joaquin basin; geologic hydrogen, which has become a hot topic in Alaska; traditional and low-temperature geothermal, which has applicability throughout much of the Pacific Section; water protection and water resource management; and mineral assessment for solar and wind installations. In my own journey as a consultant, I have worked on several projects falling under these categories and found them to be very interesting and exciting. Notice I didn't mention data scientist, project manager, or regulatory, but many petroleum geoscientists have found rewarding work in these categories as well!

There has also been some positive movement in the industry in California, at least, with permits being issued again in the state. Over the last quarter, 34 new drill permits, and 117 sidetrack permits were issued (CalGEM, Wellstar dashboard). The latest rig count in the state is up to 6 rigs, which is two more than this time last year (Baker Hughes, rig count). Alaska's rig count has held steady at 10 (Baker Hughes, rig count).

As we move into the new year, I am looking forward to celebrations around the Pacific Section in honor of the centennial anniversary. LA Basin Geological Society did a fantastic job kicking off the celebrations this past September, the same month that the Pacific Section was formed 100 years ago! Since the Section was officially adopted with AAPG in early 1925, this winter and spring are the perfect time for an event. Upcoming events include core workshops, special speakers, and symposium, so stay tuned to your local society and PSAAPG announcements. It is not too late to plan an event either, so please reach out if you have an idea or need assistance.

Finally, I'd like to remind you to please check your membership. I recently had several conversations regarding the difference in membership for AAPG, Pacific Section of AAPG, and affiliated societies. To clarify, these are separate organizations, and therefore have separate dues and membership. Paying AAPG dues does not mean you have paid (or are a member of) the Pacific Section. If you have not paid dues for the Pacific Section, please consider renewing your membership – the dues are only \$12 per year. To sweeten the deal, we have a member-only download section of the website, for special PSAAPG papers and field guides, and I can personally attest to its value. Some of our affiliated societies have separate membership dues, while some do not, so please check those as well.

Wishing you all a relaxing, safe and happy holiday season!

Amy Spaziani

President, Pacific Section AAPG 2024-2025

A Placename Story: The Stevens Sand

By Dan Steward

“Where did the Stevens Sand get its name?”

In the “before times”, around 1989-1990, I was asking around the CSU Geology Department how the Stevens sand got its name. Although everyone was aware of the prolific upper Miocene reservoir sand, no one knew the backstory on how the informal unit was named. In 1991-1993, while working over the Bakersfield Arch 3D seismic survey at Arco Exploration, searching for the elusive “subtle stratigraphic trap” with geophysicist Mark Singleton and helping Mike Clark with potential shallow gas on his Stevens or Stevens-equivalent prospects, I was met with shrugs on this question of the Stevens’ placename. Everyone found the question intriguing, but no solid answers.

During a field trip with CSUB’s Emeritus Professor of Geology, Jan Gillespie, along with Tony Reid and others, I asked Tony my favorite question regarding the Stevens Sand. Without missing a beat Tony straightforwardly explained that the sand was named after a railroad siding near Shell’s Ten Section oil field. Later I learned that this flat area on the Kern River flood plain southwest of Bakersfield was understandably devoid of good landmarks. Southern Pacific’s (Espee) branch line which ultimately served McKittrick at the terminus, passed about 1.5 miles northeast of the A-1 discovery well at Ten Section. The Espee line turns to the northwest in section 16 and at that point, the railroad installed three sidings as a local freight loading area for nearby customers. The siding was called “Stevens” (Figure 1).

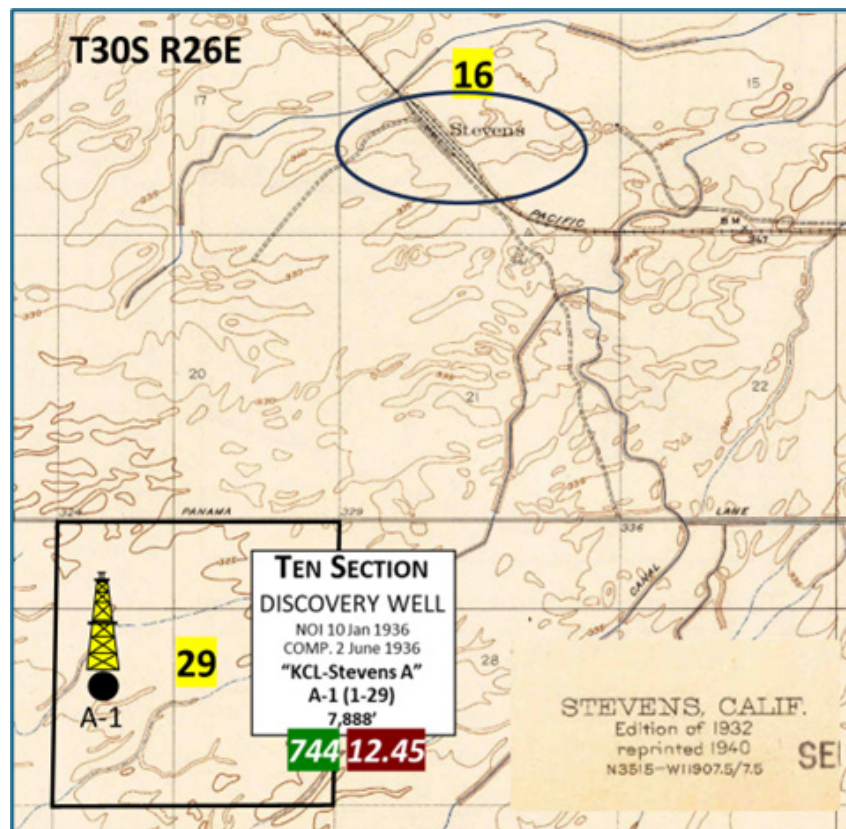


Figure 1. The Stevens siding, located +/- 1.5 miles northeast of Shell’s A-1 discovery well at their Ten Section prospect, provided a name for the prolific upper Miocene reservoir. Note that the U.S.G.S. topographic map is named after the apparently solitary feature of the area. The initial production from A-1 (later renamed 1-29) was 744 barrels of oil and 12.45 million cubic feet of gas per day.

The Ten Section discovery was significant. As noted by the late great Bill Rintoul in his book “Drilling Ahead: Tapping California’s Richest Oil Fields”, Ten Section was the first field discovered in California which utilized seismic reflection methods. This effort on Shell’s part revealed a low-relief structure approximately 6,500 feet below the quite flat Valley floor. The subtle and irregularly-shaped anticline had enough closure to provide a 4-way structural trap for what came to be understood as the upper Stevens from the discovery well. Additionally, the Stevens production was higher gravity than predecessor discoveries, being in the low 30s API, it was deeper, typically below 7,000 feet measured depth, and the production rates were impressive as shown in Figure 1 and repeatedly demonstrated with appraisal wells and later development wells at Ten Section. The “Central Basin Deep Play” was on and the Stevens was the target.

Twelve companies would spend the next 30 years drilling follow-on wildcat wells. The results proved up more than 453 million barrels of oil from 19 oil fields on just the Bakersfield Arch (Figure 2) – a southwestern-trending basement high emanating from the southern Sierra Nevada into the heart of the southern San Joaquin Basin (SSJB). Nearly 90% of the new light oil resource was discovered within the first 3 years of exploration within this new trend on the Arch. These fields were also the first “non-peripheral” discoveries made in the San Joaquin Basin, as opposed to the westside and eastside supergiants. Areas in every compass direction from the Bakersfield Arch received a new look and were explored and ultimately produced Stevens discoveries (North and South Coles Levee, Paloma, Rio Bravo-Greeley, San Emidio Nose, Yowlumne, and Landslide) in addition to many existing fields being reevaluated in light of the Stevens play, Elk Hills in particular.

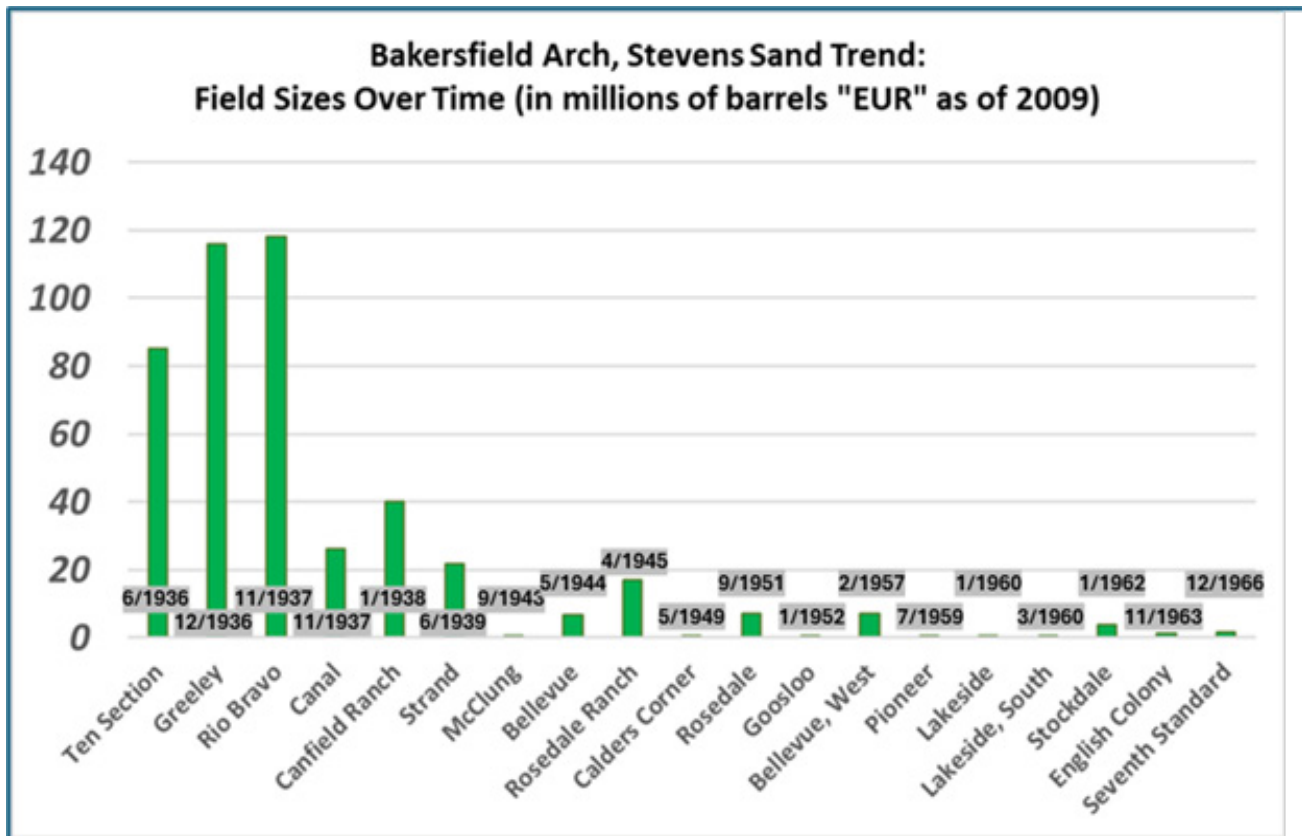


Figure 2. Field size distribution (FSD) in millions of barrels of estimated ultimate recoverable (EUR) over time from Bakersfield Arch fields with Stevens reservoirs. Note most of the resource was found within 3 years of the Ten Section discovery. The FSD shows the typical decline of estimated ultimate recoverable resource sizes over time as an exploration play matures. The subtle stratigraphic trap at English Colony in late 1963 rejuvenated exploration efforts as a new trap type was introduced to the Stevens playbook.

Back on the Arch, deepenings revealed additional Stevens pay in reservoirs below the upper Stevens discovered at Ten Section – the middle and lower Stevens were proved up and added to the target list. Step out drilling brought multiple new areas to existing fields, Stand and Canfield Ranch being good examples. Shallow gas was also encountered and later developed in what would become the Neogene Gas Play across the shallow section of multiple SSJB structures which produced more than 1/3 trillion feet of gas. Deep tests were made for the Oligocene-Eocene Vedder sand, a reservoir and much shallower in the east side fields of Mount Poso and Round Mountain. With multiple reservoirs distributed unevenly across numerous structures, plus the possibility of obscure stratigraphic traps, there was plenty of fodder for exploration teams to stay busy for decades. Many companies participated at a significant scale. Unfortunately, with two significant exceptions, the results were dryholes or non-commercial discoveries. Yowlumne (1974) with its unique compactional anticline/stratigraphic trap and Landslide (1985), a channel complex draped over a narrow ridge, located within the same turbidite depositional system, provided a needed jolt for Stevens and related turbidite exploration in the San Joaquin. The post-discovery efforts did not produce additional major discoveries. True believers will posit that additional discoveries await the efforts of enterprising exploration teams.

So, about that name at Stevens Siding. Where did it come from?

The U.S.G.S. reduced their topographic map contour scale in the area from 100 feet in 1912 to 5 feet in 1929. The resultant detail nicely illuminated the Kern River alluvial plain with an overall southwestern trend towards Buena Vista Lake. And there was one small but significant salient feature now mapped in: Stevens Hill. See Figure 3.



Figure 3. The 1929 U.S.G.S. topographic map with 5-foot contours revealed a miniscule feature standing a little more than 10 feet above its surroundings: Stevens Hill.

As Karla Tucker, of Los Angeles Basin Geological Society fame, remarked, “So, who is the Hill named after?”

That’s a good question.

AAPG Accepting Nominations for Honors and Awards

AAPG's award season is beginning with nominations accepted until **January 18, 2025**. A good way to recognize an AAPG member residing in the Pacific Section is to nominate them for a national AAPG award or honor. The Pacific Section has a good track record of members receiving major awards, most recently with Dr Richard Behl receiving the Grover E. Murray Memorial Distinguished Educator Award. Nominations may be made by any active AAPG member, working as an individual, an informal group, or within a honors and award committee at the affiliated society or Pacific Section level. For award forms and other information, go to:

www.aapg.org/about/aapg/overview/honors-and-awards

Sidney Powers Memorial Award: Given in recognition of distinguished and outstanding contributions to, or achievements in, petroleum geology. It is AAPG's most distinguished award.

Michel T. Halbouty Outstanding Leadership Award: Given in recognition of outstanding and exceptional leadership in the petroleum geosciences. It is AAPG's most distinguished leadership award.

Honorary Member Award: Bestowed upon persons who have distinguished themselves by their service and devotion to the science and profession of petroleum geology and to the Association.

Norman H. Foster Explorer Award: Given in recognition of distinguished and outstanding achievement in exploration for petroleum or mineral resources, by members who have shown a consistent pattern of exploratory success, with an intended emphasis on recent discovery.

Robert R. Berg Outstanding Research Award: Given in recognition of a singular achievement in petroleum geoscience research.

Distinguished Service Award: Presented to members who have distinguished themselves in singular and beneficial long-term service to AAPG.

Pioneer Award: Given to long-standing members who have contributed to the Association and who have made meaningful and significant contributions to the science of geology and have not received other awards but are deserving of recognition.

Grover E. Murray Memorial Distinguished Educator Award: Given in recognition of distinguished and outstanding contributions to geological education. Contributions leading to consideration for this award will most often involve the teaching and counseling of students at the university level, and contributions to the education of the public, and management of educational programs may also be recognized.

Geosciences in the Media Award: Given to a person in recognition of notable journalistic achievement in any medium which contributes to public understanding of geology, energy resources, or the technology of oil and gas exploration.

Young Professionals Exemplary Service Award: Given to members who have promoted growth, awareness, and expanded opportunities within the organization for young professionals. The award will help recognize the importance of AAPG volunteers dedicating themselves to helping inspire, retain and recruit future geoscientists within the Association as well as to the organization and profession in general.

Harrison Schmitt Award: Recognizes individuals or organizations that, for a variety of reasons, do not qualify for other Association honors or awards. The recipient is not required to be an AAPG member.

Public Service Award: Given to recognize contributions by members of the Association to public affairs and to encourage geologists to take a more active part in such affairs.

Jean B. Senteur De Boue

Richard L. Hester

Early in 1955, during the apparent lull in activity, several junior members of the Oceanic Oil Company in Bakersfield hit upon the idea of "inventing a geologist" to put into the forthcoming Pacific Section Directory.

The progenitors of the soon-to-be-famous Jean B. Senteur de Boue were Jim O'Neill, Ernie Rennie, Dave Callaway and Hal Hanson.

They chose a French name which loosely translated means "smeller of mud". Later, when Schlumberger's Jacques Gallois noticed the name, he said "eet ees a gude name for a geologist".

The Oceanic group chose the University of Lyon, France for de Boue's background, made him an independent consultant and gave him the address of the Tidewater service station across the street from Oceanic's office on Oak Street.

They made up a composite photo of Ernie Rennie and Hal Hanson and sent the fuzzy and blurred print to the Directory Editor, who was Ev Pease with Sunray in Los Angeles. In general, Ev's secretary was handling most of the correspondence concerning the Directory, and eventually wrote back asking for a clearer picture.

The Oceanic group sent the picture back, saying that de Boue was in France and could not be reached before the Directory deadline and this was the best they could do.

Senteur de Boue became a member of the Pacific Section when the Directory was published for 1955. Ev Pease, who is pretty much a no nonsense type, didn't much care to have this happen when he was Directory Editor.

The newly invented character soon became a favorite, and notices of his doings and thinking began appearing in the Pacific Petroleum Geologist newsletter.

Earl Price of Bakersfield's 'Price Prints Pronto' fame had earlier begun a log library and was soliciting customers and sources for any available logs or histories. Naturally he wrote Senteur de Boue because he was in the Directory. The station manager of the Tidewater station dutifully passed the letter along to the connivers. This was early summer in 1956.

Their attitude was, if Earl wants de Boue's E-logs, then let's give him one. The boys concocted a composite E-log which contained every producing sand ever seen on the East Side of the San Joaquin Valley including some basalt and schist. While in the schist, a thrust fault was cut and the well went back up the section - upside down! All this was in a well which TD'd at 5260', 20' less than a statute mile. Dave Calloway drafted the log up to represent a standard Schlumberger form.

The location of the "well" was placed in a tier of missing sections where the MDB&M meets the SBB&M surveys in the Tejon-Comanche Point area: Sec. 21 -12N/19W. The log run was witnessed by de Boue.

Earl Price (bless his soul) was so delighted to receive this item of considerable exploration value that he immediately shotgunned copies of it (both blue-line and sepia prints) with his next regular monthly mailing to subscribers who had signed up for copies of 'anything available', of which there were many.

From there on, the situation became a little more serious, especially when the Tidewater service station maildrop received a letter from a more-or-less enlightened Earl Price (who was a combat Colonel in WWII) saying to the effect that "fun is fun, but this cost me \$550." (a not inconsiderable amount in those days).

Apparently, throughout the profession, some of the more perceptive souls caught on to the scheme rather

early and asked for a refund of the printing costs. Others, bless them, also caught on to the scheme and loved !!! They paid the "Price", so to speak, for such an interesting item associated with such an interesting consultant; for he did, among other things:

- 1) Scuba Dive in Searles Lake looking for microorgasms (a paleontological survey).
- 2) Wrecked a company jeep driving off a 40' cliff at the edge of Tulare Lake.
- 3) Made diving expeditions in the Santa Barbara channel for the Mohole program.
- 4) Etc.

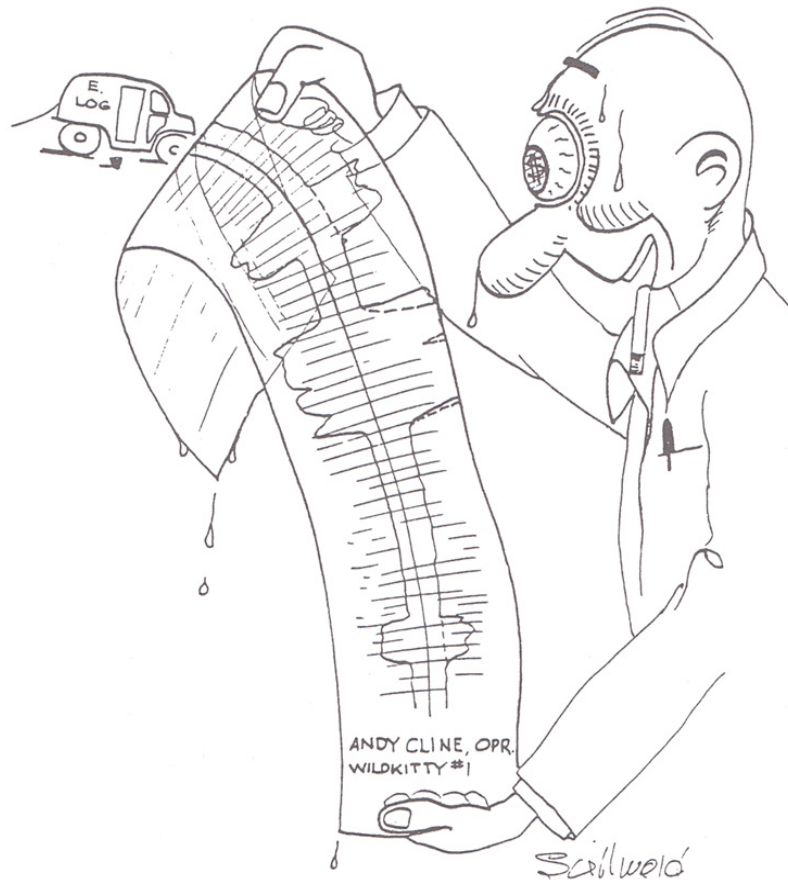
His address and phone number changed from the Tidewater station in Bakersfield to Gaviota (2 long, 1 short, 1 long), Wildrose Station (4 long), and Zabriski Point. Usually he could be reached when necessary by calling the operator at Trona.

My own involvement in this was in selecting an area and drill-site and general confidant and advisor.

A history of the well was being prepared when O'Neill received a direct letter from Mr. Price (which Jim thoughtfully ignored) and the boys decided to "cool-it" for awhile.

As for myself, I immediately volunteered to go to Guatemala to do fieldwork for a year to get away from the flack.

In the meantime, dear old de Boue has certainly captured a large group of followers, perhaps second only to Andy Cline, and so far has become a real sounding board of commentary and humor, which to us, is a very necessary ingredient of a healthy profession.



OIL SEEP IN UPPER JURASSIC STRATA OF THE NAKNEK FORMATION NEAR BARABARA CREEK ON THE BARABARA CREEK ANTICLINE, UGASHIK C-1 QUADRANGLE MAP, NORTHERN ALASKA PENINSULA

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The presence of significant surficial oil and gas seeps were the first primary tools used by petroleum explorationists in the search of new prospects in earliest times in the Oil Industry, i.e. Azerbaijan in the former Soviet Union, Indonesia, Africa, Venezuela, Trinidad, California and the area around Titusville, Pennsylvania, site of first commercial oil well in North America drilled by Col. Edwin L. Drake in 1859. The early explorer's used seep locations and surface geological mapping to identify potential prospects (Figure 1.)

Seeps were also used as initial target area in Alaska dating back to the beginning of the first decade of the 20th Century in southern Alaska in the area of Katalla, Gulf of Alaska (Blodgett, 2018), the Puale Bay area in northeastern part of the Alaska Peninsula (Blodgett, 2017), and the Iniskin Peninsula on west side of Cook Inlet (Blodgett, 2018). An excellent summary of this early exploration activity was provided by Roderick (1997). Additionally, oil seeps are well known from the North Slope.

Our emphasis here is to present more data on the largest oil seep, the Barabara Creek seep, on the northeastern Alaska Peninsula, and delineate its stratigraphic setting better (see Figs. 12-13). The Alaska Peninsula and southern Cook Inlet region is under explored and has the potential source and reservoir strata, with working kitchen's strongly suggested by these documented oil seeps. The primary drilling done in the immediate region was completed with primitive cable tool equipment. We feel that reinvestigation and redrilling the immediate area could be highly successful.

UGASHIK CREEK AND BEAR CREEK ANTICLINES

One of the primary seep concentrations on the Alaska Peninsula are situated near the crests of the NE-trending Ugashik Creek and Bear Creek anticlines. In the older archaic exploration language used in the regions these earlier known as the West Field and East Field. The East Field was the locus of drilling activity during the first decade of the 20th Century, and the West Field was subsequently drilled in the 1920's.

BARABARA CREEK OIL SEEP

The so-called "West Field" which was the locus of oil drilling on the Alaska Peninsula in the early 1920's was obviously selected due to the presence of two major oil seeps (localities 11-12 of Blodgett and Clautice, 2005) along Barabara and Pearl Creek of original usage (respectively now shown as Little Ugashik and Barbara Creeks on the current USGS Ugashik C-1 quadrangle topographic sheet). All of these seeps are situated just west of the axis of the Ugashik Creek anticline and are emerging from near outcrops of the basal part of the Upper Jurassic Naknek Formation [Jnc unit (or conglomerate member) of Detterman et al., 1987). Although these seeps are located in the basal part of the Naknek Formation, both are in fault zone occurrences and the most likely source is thought to be from the Middle Jurassic Kialagvik Formation and Upper Triassic Naknek Formation underneath. We have visited the classic Barabara Creek seep (locality 11 of Blodgett and Clautice, 2005) and was impressed by the size and quality of oil issuing from this seep. It is by far the largest known seep in the upper Alaska Peninsula and the purity of oil in the upper reaches of the seep area exceeds that of all other known seeps that we are familiar with in southern Alaska.

Downslope from the seep is a residue patch which was mined during the 1920's to provide fuel for the drilling operations. This seep is documented photographically in Figs. 6-11. This seep was not reported upon in the definitive regional seep survey of Blasko (1976), presumably he and his colleagues were unable to locate this during aerial reconnaissance. A sample of oil was collected during the summer of 2012 and a geo-chemical analysis was done by Weatherford Laboratories (Shenandoah, Texas), the results. The Barabara Creek seep is closely associated with a major fault that trends down the creek (Smith, 1926), and seems most likely that this seep and its associated residue patch are directly linked to fractures along the fault trace.

SUMMARY

Cook Inlet and the Alaska Peninsula are a Fore Arc Basin dating from the Mesozoic to Present times and a major Oil and Gas producing Basin (USGS suggests there is ~650 million barrels of Oil, Condensates, NGLs, and 19 TCF of Gas Yet-To-Find in just North Cook Inlet). North Cook Inlet has been the focus of production since 1958 and has produced 1.2 Billion bbls and ~ 8 TCF of Gas from this area. The Alaska Peninsula and southern Cook Inlet region is under explored and has the potential source and reservoir strata, with working kitchen's strongly suggested by these documented oil seeps. Source rocks in this Southern Cook Inlet and Alaska Peninsula area, to date are seen in the Triassic and Jurassic marine strata (see Figs. 12-13).

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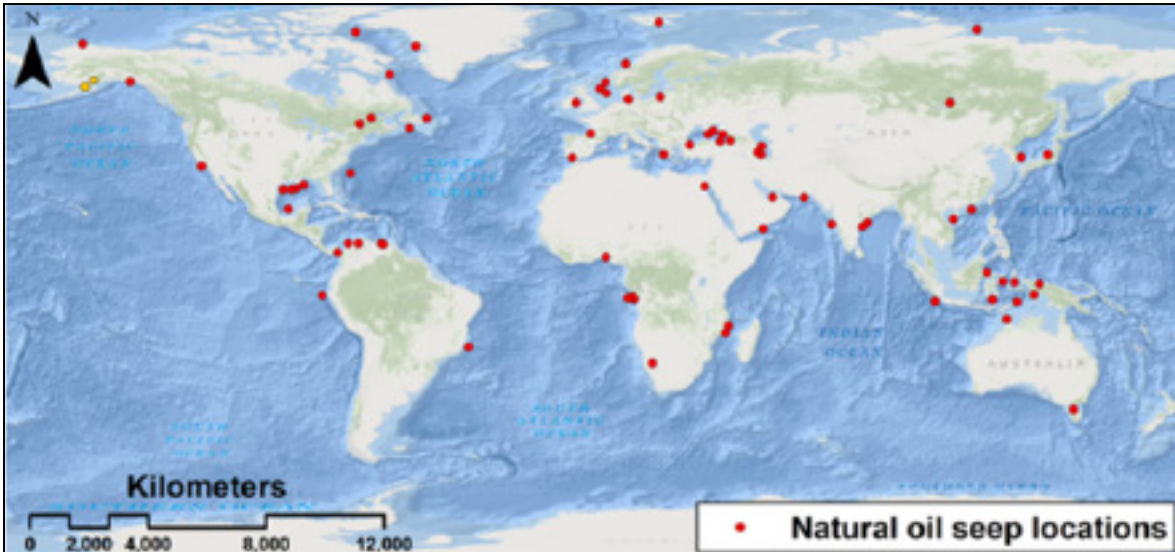


Figure 1. Generalized locations of well-documented natural oil seeps.



Figure 2. U.S. Geological Survey field party led by W.R. Smith cooking breakfast during summer of 1923 over natural gas seeps along the aptly named Gas Creek (NW of Becharof Lake near southern boundary of Katmai National Park). Gas appears to be emerging from stream gravels above Upper Jurassic Naknek Formation.



Figure 3. Map showing major anticlinal features in the northern portion of Koniag Inc. land holds on the Alaska Peninsula (base map modified from Detterman et al., 1987). The archaic oil field terms West Field and East Field correspond to the Ugashik Creek and Bear Creek anticlines, respectively. The Wide Bay anticline represents a southerly extension of the Bear Creek anticline.



Figure 4. Reported oil seeps along the Ugashik Creek anticline (localities 11-13). Most of these are on or adjacent to current land holding of the Koniag Corporation. Locality 11, the Barabara Creek seep is the largest seep in the entire Puale Bay - Lake Becharof re-gion and is located on the north side of Barabara Creek (mis-labeled Little Ugashik Creek on current USGS Ugashik C-1 quadrangle topographic sheet). It is located near the base of a west-trending ridge descending from Mount Lee. Several well drills drilled in the 1920's (notably Lee #1 well) are located immediately to the south on the westerly flanks of Mount Demian. Test results from Weatherford Laboratories indicated the oil from the Barabara Creek seep to have an API Gravity @ 60° value of 16.0. All of these seeps are associated with nearby outcroppings of strata belonging to the lowermost part of the Upper Jurassic Naknek Formation (figure from Blodgett and Clautice, 2005).

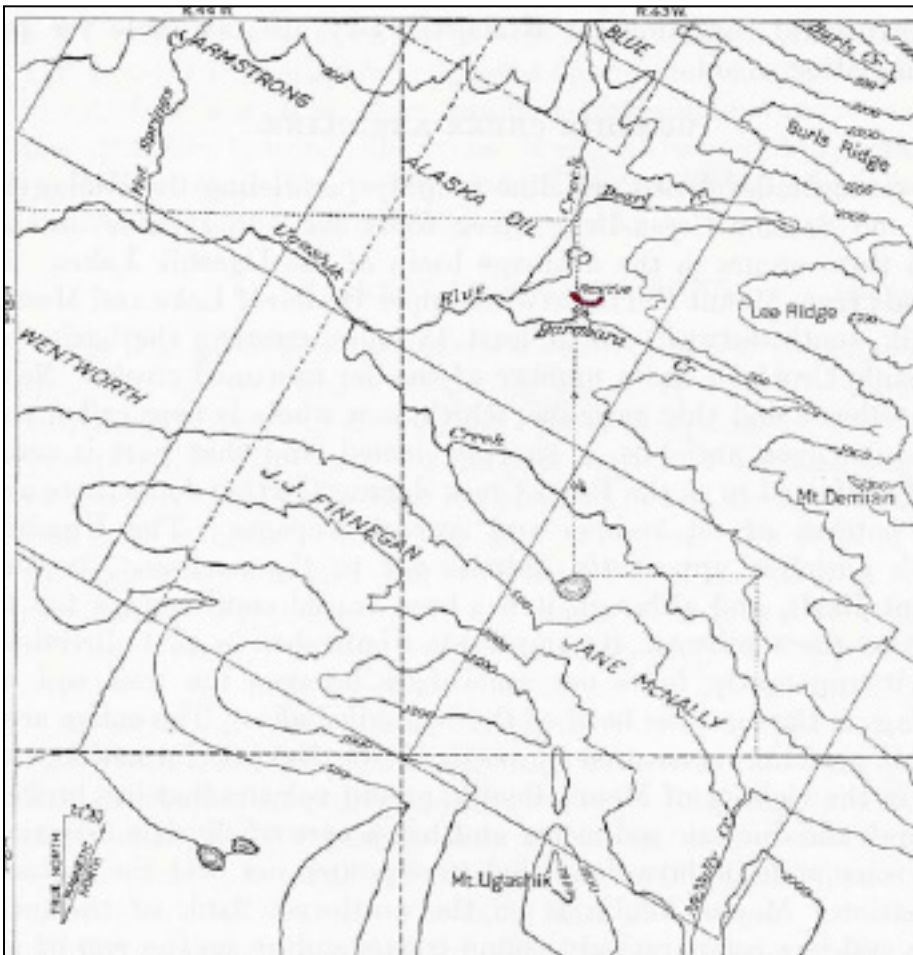


Figure 5. Map from Capps (1923, Fig. 6) showing Barabara Creek oil seep (colored red) and correct original locations of Barabara Creek and Pearl Creek (note the current USGS topographic map of the Ugashik C-1 quadrangle incorrectly labels them as Little Ugashik and Barbara creeks, respectively).



Figure 6. Barabara Creek oil seep. Pearl Creek Dome visible in the upper right corner.

Figure 7. Oil seepage along lower course of large oil seep on north side of Barabara Creek (misabeled Little Uga-shik Creek on current USGS Ugashik C-1 quadrangle topographic sheet). Seepage north of the "West Field" (Pearl Creek Dome) oil camp. Seepage referred to in Capps (1923), Smith and Baker (1924), and Smith (1926).



Figure 8. Oil seepage in middle of large oil seep on north side of Barabara Creek (misabeled Little Uga-shik Creek on current USGS Ugashik C-1 quadrangle map).

Figure 9. Oil seepage from upper end of large oil seep on north side of Barabara Creek (misabeled Little Ugashik Creek on current USGS Ugashik C-1 quadrangle map). This is one of the largest and most oil-rich patches at this seep.





Figure 10. Another view of the oil seepage shown above from up-per end of large oil seep on north side of Barabara Creek (misla-beled Little Ugashik Creek on current USGS Ugashik C-1 quad-range map). This is one of the largest and most oil-rich patches at this seep.



Figure 11. Another view of the same oil seepage shown in Figures 6-10.

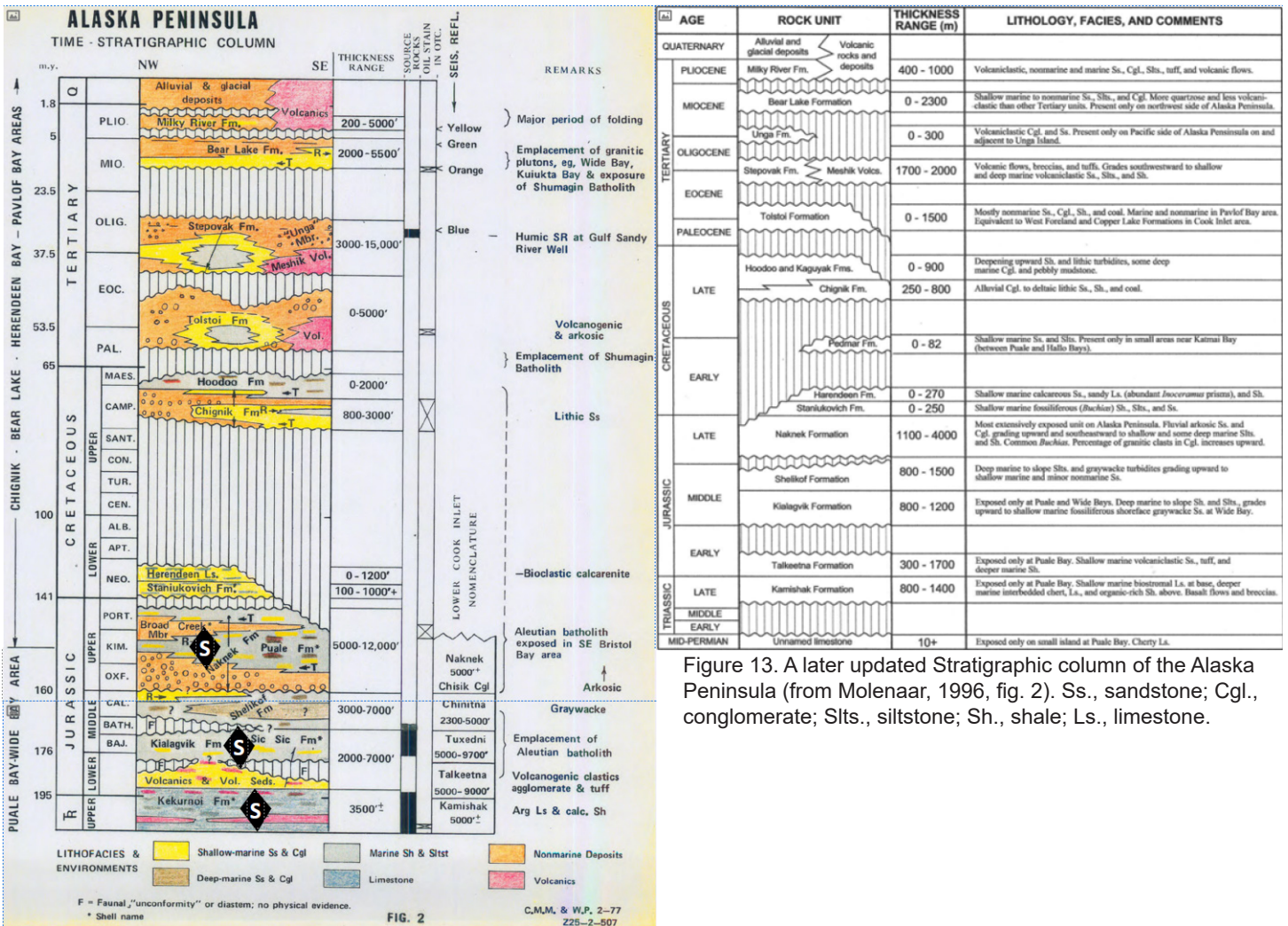


Figure 13. A later updated Stratigraphic column of the Alaska Peninsula (from Molenaar, 1996, fig. 2). Ss., sandstone; Cgl., conglomerate; Sls., siltstone; Sh., shale; Ls., limestone.

Figure 12. A stratigraphic column for the Mesozoic and Tertiary age rocks of the northern Alaska Peninsula (from Molenaar, 1977, fig. 2). Note three source horizons for petroleum indicated: the Upper Triassic Kamishak Formation (=his Kekurnoi Fm.), the Middle Jurassic Kialagvik Fm. (equivalent to the Tuxedni Group in Cook Inlet) and the Upper Jurassic Naknek Fm.

News of Interest to Members:
**Inglewood Oil Field owner sues California for
'illegal' terminating of operations**

By Tony Briscoe
LA Times Staff Writer
Nov. 28, 2024

The owner of the Inglewood Oil Field is suing the state of California in an attempt to invalidate a state law that will require the energy company to cease production and plug all of its wells — or pay costly fines.

In a lawsuit filed this week, Sentinel Peak, the sole owner and operator of the oil field, argues that Assembly Bill 2617 is an unconstitutional statute that will impose unreasonably high penalties on the company, forcing it to halt operations.

The law, signed by Gov. Gavin Newsom in September, requires all low-production wells in the Inglewood Oil Field to cease operations by March 2027 and all wells to be plugged by the end of 2030. Failure to meet those deadlines will result in a monthly \$10,000 penalty for every well in violation.

The law would effectively oversee the end of fossil fuel extraction in the Inglewood Oil Field, where drilling has occurred for a century. The 1,000-acre field — located in Culver City, Los Angeles' Baldwin Hills and unincorporated Ladera Heights — has approximately 820 unplugged wells, including 420 that are actively pumping oil. Roughly 80% of these operating wells are considered low-producing, meaning they yield less than 15 barrels of oil or 60,000 cubic feet of gas per day.

Attorneys for Sentinel Peak said the law “represents an illegal attempt to coerce an individual company to stop operation of its legal business,” according to court documents. They allege that mandatory fines in particular, violate federal and state laws that forbid excessive monetary penalties.

“The monetary penalties imposed by AB 2716 are

grossly disproportional to the gravity of the offense that it is designed to punish,” the lawsuit reads. “The imposed penalties are fixed and mandatory with no apparent upper limit. They have no relationship to any actual harm incurred by neighboring uses.”

The California Department of Conservation's Geological Energy Management Division, the state oil and gas regulator, declined to comment on the litigation. But Assemblyman Isaac Bryan (D-Los Angeles), who authored the law, vowed to defend the legislation.

“Our community has stood strong for decades to close this dangerous low-producing oil field, and we will stand strong in court to protect those frontline communities who have long deserved the right to live a full and healthy life,” Bryan said. “The people of California spoke through their legislature that dangerous oil wells have no business right next to the community. It is the right and prerogative of the government to protect its people.”

The litigation is the latest sparring match over the landmark legislation. The original version of AB 2617 included \$10,000-a-day fines for all low-producing oil wells statewide. However after negotiations with California's oil lobby, the bill was narrowed to only the Inglewood Oil Field.

Sentinel Peak, a Denver-based energy company, said the law “intentionally singles out and discriminates against” their operation in the Inglewood Field. “AB 2716 does not impose any requirements on other similarly situated oil production operations even if they also operate in proximity to residential areas,” the lawsuit reads. “The law applies to Petitioner as a ‘class of one.’”

*News of Interest to Members:***Lawsuit challenges county's approval of Elk Hills carbon removal project**

By John Cox

Bakersfield Californian

Nov. 22, 2024

A lawsuit filed this week in Kern County Superior Court has presented California's first carbon removal project with its first formal legal challenge.

Wednesday's suit by environmental justice and conservation groups accused Kern's Board of Supervisors, and county government more broadly, of violating the California Environmental Quality Act by failing to thoroughly analyze impacts of, and alternatives to, a large carbon capture and sequestration facility the board approved Oct. 21 for construction in western Kern.

Among many concerns raised in the 37-page petition is a central allegation county staff failed to properly scrutinize the project's future sources of carbon dioxide. A news release plaintiffs issued Friday said these sources could include gasoline, hydrogen, cement and steel production, suggesting the project by California Resources Corp. is more about extending the life of petroleum investments than reducing greenhouse gas emissions to address climate change.

“CRC is presenting Carbon TerraVault I as a ‘climate solution,’ but it's really a trojan horse — one filled with dangerous, high-pressure pipelines and unacceptable pollution risks for communities already bearing California's heaviest air quality burden,” stated Senior Organizer Mercedes Aguilar with plaintiff the Sierra Club. Other petitioners in the case are the Center for Biological Diversity, Central California Environmental Justice Network, Comité Progreso de Lamont, Committee for a Better Shafter and Delano Guardians.

The legal action is reminiscent of a consolidated lawsuit, filed almost a decade ago by some of the same groups, that has halted local permitting of oil and gas

production in Kern County. Like that action, this week's suit targets the environmental review undergirding an economic activity local officials see as critical to the area's financial stability.

A county spokeswoman declined Friday to comment on the litigation. In past comments, though, the county has emphasized that the project's future carbon sources will be reviewed later and judged on their own merits. It has also characterized CO2 leaks at CTV I as unlikely, adding that there is no substantial evidence that natural or induced seismic events will allow the gas to escape, and that monitoring will be in place to notify residents and workers in the event of a leak.

Long Beach-based CRC, the state's largest oil producer, was named in the suit as a real party in interest. It said by email Friday, “We are confident in the environmental review process conducted by Kern County and look forward to implementation of this project.”

As one of six such projects CRC hopes to build in California, CTV I would capture 49 million metric tons of carbon dioxide and store it indefinitely in a pair of underground reservoirs extending below 9,104 acres in western Kern. The initial source of CO2 would be a power plant CRC operates in the Elk Hills Oil Field and pre-combustion natural gas from the company's existing methane processing plant in the area.

The 37-page writ of mandate and complaint for injunctive relief said the county and the board failed to fully analyze CTV I, mitigate its potential impacts and carefully consider potential project alternatives. It asked the the court to vacate the board's approval along with its certification of the project's environmental impact report, adoption of findings and statement of overriding considerations.

The Elk Hills Oil Field, where CTV I is proposed, has numerous geological faults and is among the most seismically active areas in California, according to the suit. It said the field has thousands of oil and gas wells through which CO2 could escape.

Plaintiffs allege the county's 5,600-page environmental review, appendices included, did not adequately describe and analyze impacts from heavy-duty truck traffic, air pollution from fine particulates or pipeline safety hazards. It also said more should have been done to gauge how the project would extend the life of existing CO2-emitting industries and affect energy resources, geology, the area's water supply and nearby biological resources.

Residents as far away as Bakersfield could be affected by the project's environmental impacts, the suit said. Friday's news release included calls for increasing California's renewable energy capacity rather than undertaking a project that could support continued production of petroleum products.

“Kern County has bought into the misleading claim that this project will reduce climate impacts, opening the door to significant federal and state financial

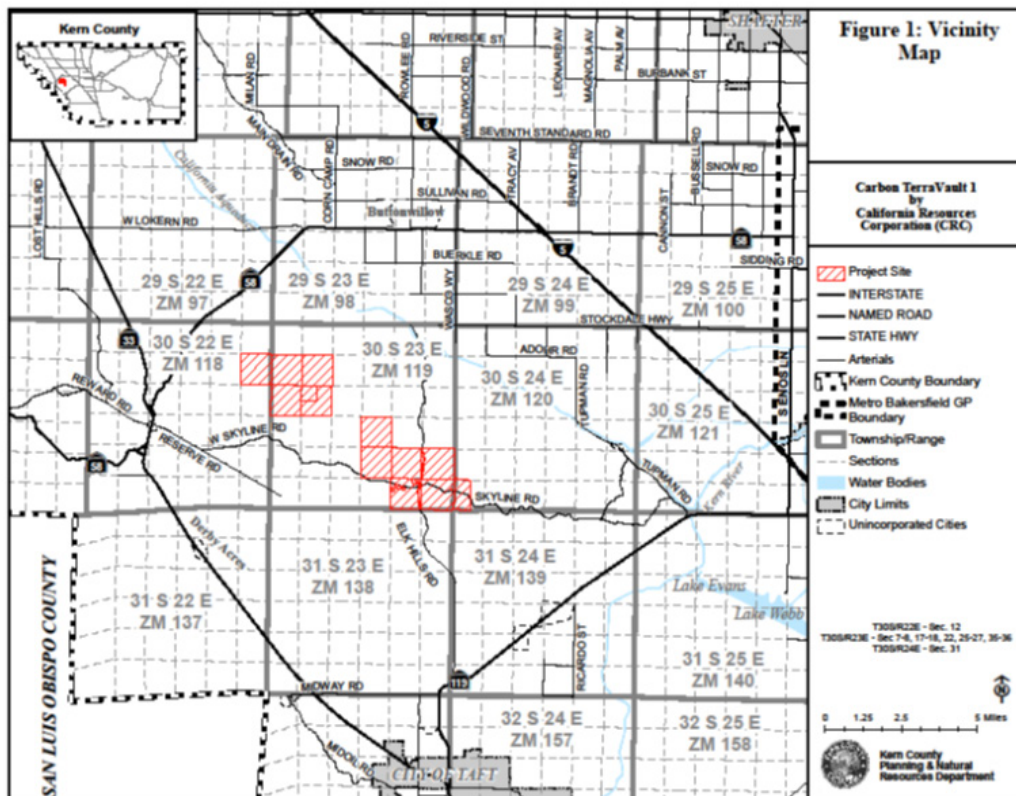
subsidies for CCS,” stated Michelle Ghafar, an attorney at Earthjustice, which is representing CCEJN in the case.

“This is exactly the type of ‘wolf in sheep’s clothing’ diversion by the oil and gas industry that Californians must oppose if we want to make real climate progress,” she added. “We must invest in renewable energy, not false solutions hawked by the source of the problem.”

President Diana Mireles of Comité Progreso de Lamont added that local communities are forced to face the effects of daily living in one of the country's most polluted regions.

“Now, the county has approved this carbon capture and storage facility, completely ignoring our concerns about increasing the lifespan of polluting infrastructure and attracting more carbon-emitting projects with their own impacts,” she stated.

"We deserve better than a government that only answers to the oil industry," Mireles continued. "We won't accept this; so, we're fighting back."



Regional Vicinity Map, Carbon TerraVault 1 Project. From Notice of Preparation of an Environmental Impact Report – Carbon TerraVault 1 by California Resources Corporation (PP22405), Kern County Planning and Natural Resources Department, March 4, 2022.



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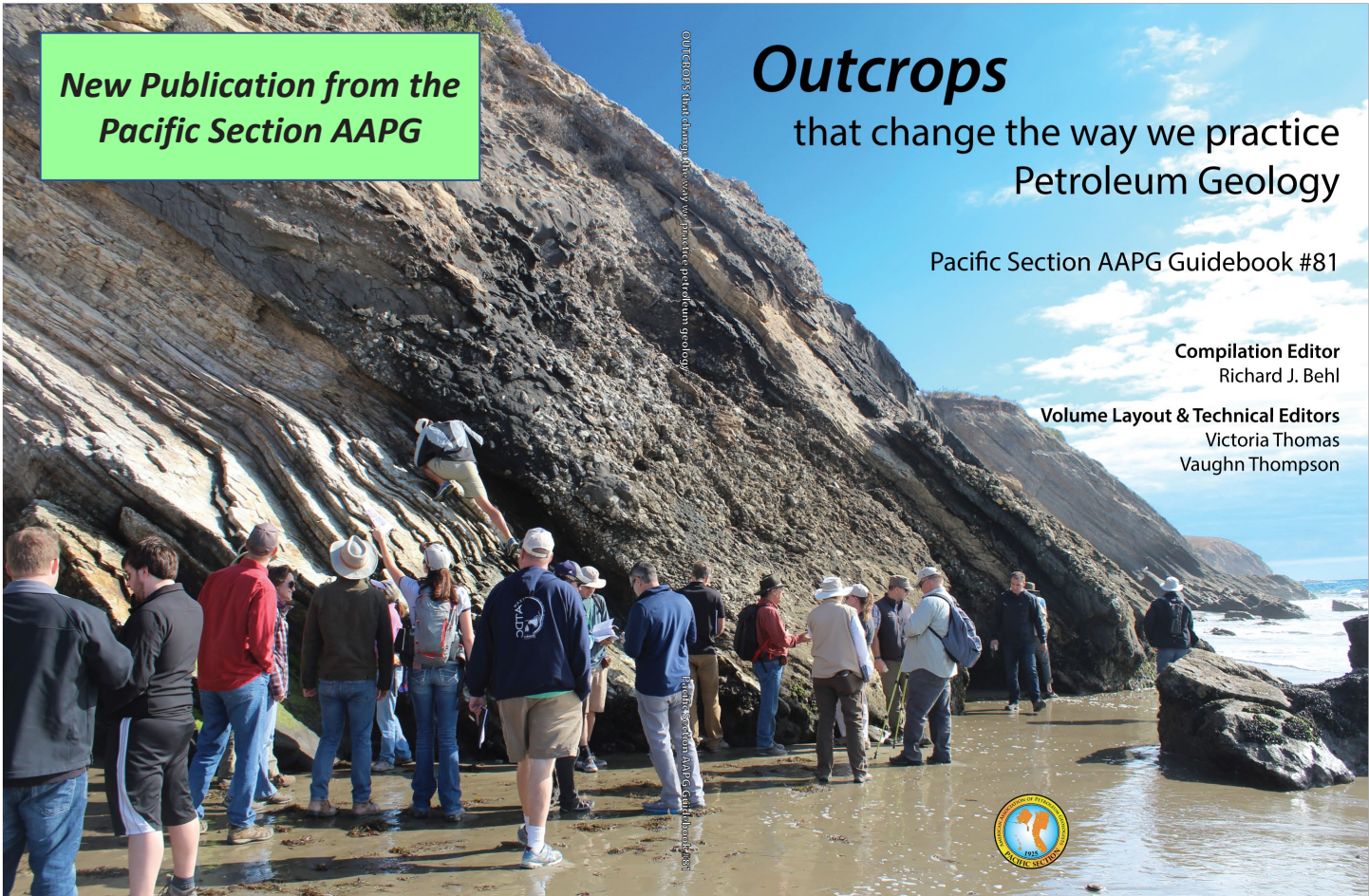
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Member Society News

ATTENTION PACIFIC SECTION AAPG MEMBERS

- Do you have a talk you would like to give at a Pacific Section Society meeting?
- Most of the Pacific Section Societies are searching for talks to completed their monthly meeting schedules for 2025.
- You are encouraged to contact the Societies and inquire about the suitability of your talk for their audiences.

Alaska Geological Society
www.alaskageology.org

P. O . Box 101288
Anchorage, AK 99510

Monthly meetings are usually held on the last Thursday of the month. Most meetings are hybrids, using Google Meet, and in person at the BP Energy Center. Doors open 11:00 am.

Next meeting: January 15, 2025

Speaker: Jason Craig

Topic: Pilgrim Hot Springs geothermal energy potential

February 12, 2025

Speaker: Chris Waythomas

Topic: Volcano-initiated tsunamis

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Coast Geological Society
<http://www.psaapg.info/cgs/index.html>

P. O. Box 3055
Ventura, CA 93006

In-person meetings are the third Tuesday of the month at the Poinsettia Pavilion, 3451 Foothill Rd, Ventura, CA 93003

Next meeting: January 21, 2025

Speaker: Susie Bartz and Dr. Jonathan Hoffman

Topic: Thomas W Dibblee Jr' life and legacy

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Past-President:	Renee Richards	
Vice President:	Sabina Thomas	CoastGeologicalVicePresident@gmail.com
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(Continued on next page)

Los Angeles Basin Geological Society
www.labgs.org

Luncheon meetings have a new venue: Signal Hill Petroleum located at 2633 Cherry Ave, Signal Hill, CA (562-595-6440, Brady Barto, ext. 5233). Meetings are on the fourth Thursday of the month, from 11:30 am to 1 pm.

Next meeting: January 23, 2025

Speaker: Bill Bartling

Topic: Repurposing Idle Oil and Gas Wells to Thermal Energy Storage Systems for Long Duration, Dispatchable Electricity Delivery

President:	Dan Steward	daniel@ironhorseenergy.com
Vice President & Programs	Rick Behl	richard.behl@cslb.edu

Northern California Geological Society
www.ncgeolsoc.org

803 Orion #2
Hercules, CA 94547-1938

Meetings are at the Orinda Masonic Hall and online using Zoom on the fourth Wednesday of the month. Talks are 7:15 pm to 8:30 pm (social half-hour at 6:30 pm)

Next meeting: January 29, 2025

Speaker: Rune Storesund, Storesund Consulting

Topic: New AEG Special Publication on Urban Landslide Hazard Mapping: A Case Study in Orinda, CA (joint meeting with the AEG San Francisco Bay Area Chapter)

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San Joaquin Geological Society
www.sanjoaquingeologicalsociety.org

P. O. Box 1056
Bakersfield, CA 93302

DINNER MEETINGS:

SJGS meetings are on the second Tuesday of the month at the American Legion Hall, 2020 H St Bakersfield, CA.

Check the web site for information on upcoming meetings.

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