

FORESIGHT!

CALIFORNIA STATE UNIVERSITY, FRESNO



SPRING 2019

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From the Editor



I am so pleased to be the *Fore Sight!* magazine editor for this school year! I have been attending California State University, Fresno since I graduated high school, which seems like forever. I am more than grateful for the support and encouragement I have received from my classmates and engineering professionals in this field.

I am proud to say that I am part of the 0.2 % of Fresno State's Native American Indian population. I am a registered member of the Te-Moak Tribe of Western Shoshone which is out of Elko, Nevada. I took my first breath in Reno, Nevada and I have been a California resident for 16 years. My goal in life is to finish my last year in college strong, continue my surveying career out in the fields, and continue my education. I also plan to help the orphaned tribal children who have never been outside of their reservation sites. I want to show them where a stable education/career can take them.

I am so ecstatic for you to enjoy this wonderful set of articles written by these awesome, hard-working Fresno State Geomatics students.

Go Bulldogs!!



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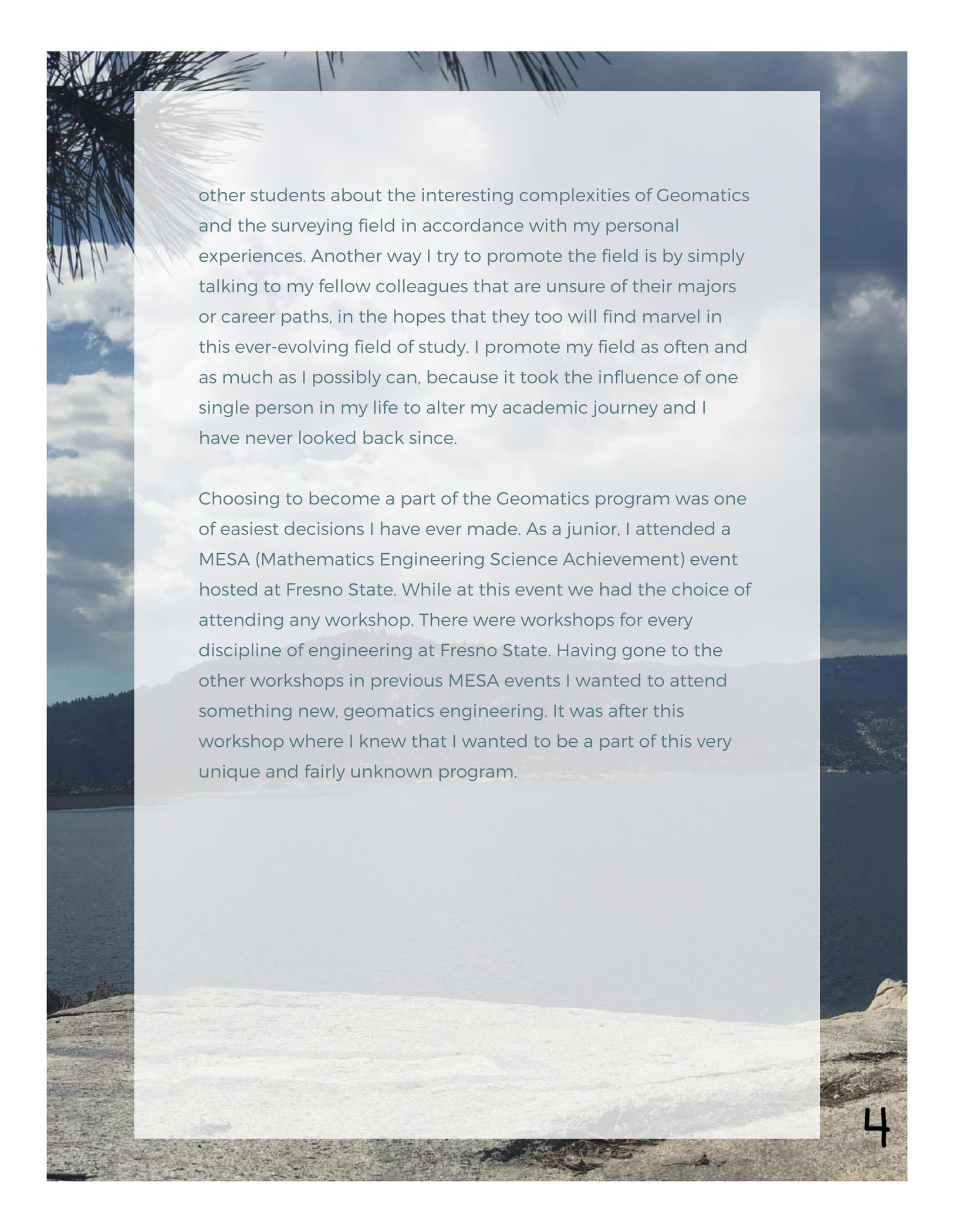


GME EXPERIENCE

By Alberto Loera

I am very thankful to have achieved employment with a company related to my field this past year, though my hard work, past internships, social network, and my classmates. I am a survey technician in Reedley, California for BASE Consulting Group, INC. I have gained hands on experience in boundary and topographic survey, as-built surveys, drone surveying, and LiDAR scanning. I work with many innovative programs. The first one is called, Cyclone, a program that aids in aligning, registering, and choosing points of interest out of the scans for in-detail surveys. The second program I use is called Pix4D, which works in registering photos and ground control points to elevate point clouds for survey use. Lastly, I have recently obtained the FAA Part 107 License, allowing me to fly drones commercially. This is something I have always wanted to achieve since my first day on the job.

To say I am happy to be in this field of work and study is a complete understatement; I live for this line of work and all of the contributions it grants to our society. This is one of major reasons as to why I try my best as an individual to promote my field any chance I get. For example, I often volunteer at the high school I graduated from, alongside my former engineering teacher, to tell



other students about the interesting complexities of Geomatics and the surveying field in accordance with my personal experiences. Another way I try to promote the field is by simply talking to my fellow colleagues that are unsure of their majors or career paths, in the hopes that they too will find marvel in this ever-evolving field of study. I promote my field as often and as much as I possibly can, because it took the influence of one single person in my life to alter my academic journey and I have never looked back since.

Choosing to become a part of the Geomatics program was one of easiest decisions I have ever made. As a junior, I attended a MESA (Mathematics Engineering Science Achievement) event hosted at Fresno State. While at this event we had the choice of attending any workshop. There were workshops for every discipline of engineering at Fresno State. Having gone to the other workshops in previous MESA events I wanted to attend something new, geomatics engineering. It was after this workshop where I knew that I wanted to be a part of this very unique and fairly unknown program.

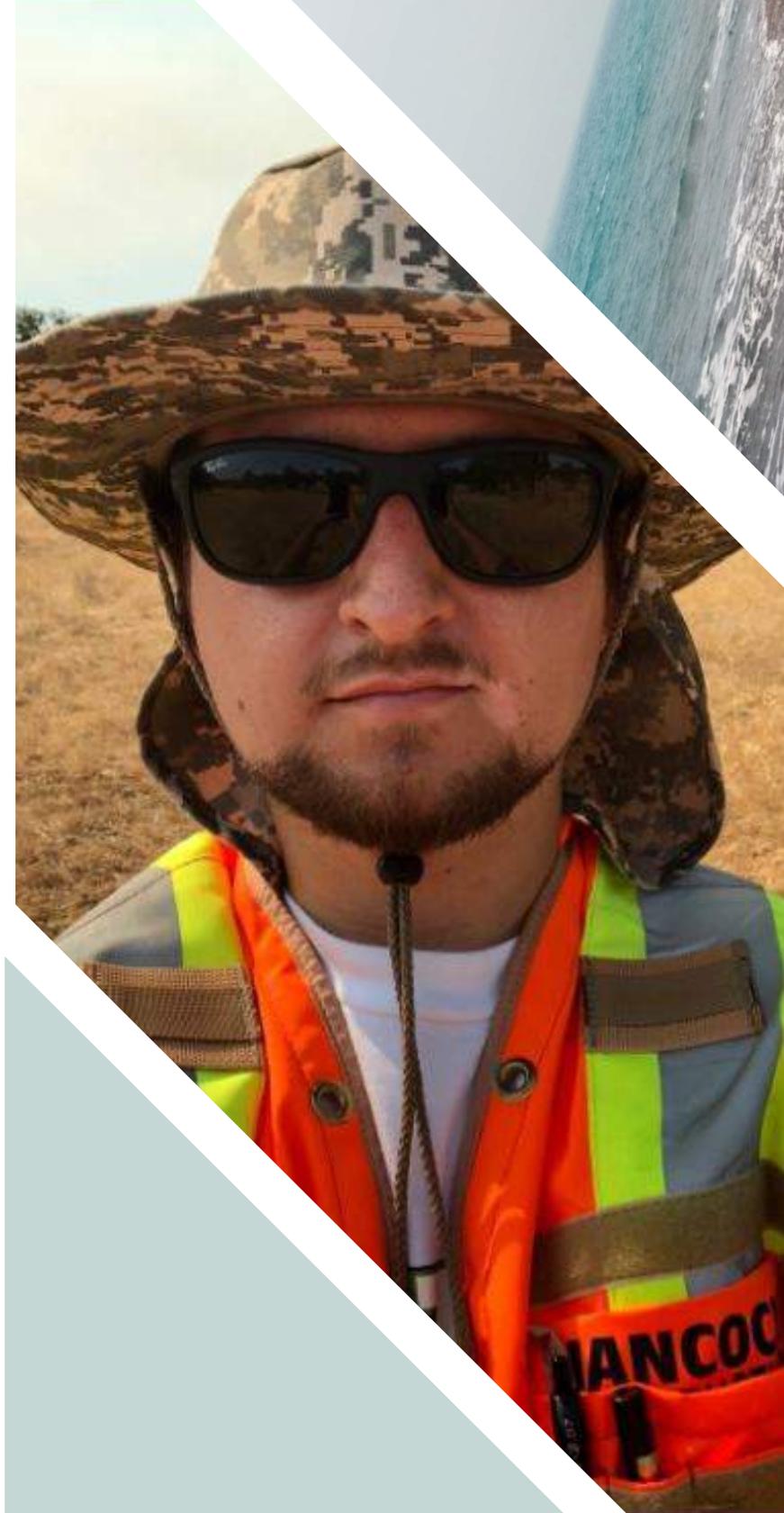
ENDLESS OPPORTUNITIES

WRITTEN BY ARAM SANTOS
SANTOS

It's interesting how things can change growing up. Growing up in a small town of just eight thousand people, I did not have the best high school education or much opportunity to pursue STEM. It took me a few years of going to Hartnell Community College to really catch up to normal college level English and Math.

One day, I spoke with my Geology professor outside of class. As he explained to me what he does outside of teaching in the classroom, He showed me some of the surveying work that he does for PG&E. I began to do my own personal investigation as to what surveying is. I became more and more interested in pursuing my own career. Shortly after this I discovered that Fresno State offers a bachelor's degree in Geomatics Engineering. From here, I decided to change my major from an AA in automotive shop management to Geomatics Engineering.

I chose this major because I like to work outside and learn about new technology used to to conduct surveys. In high school,



Aram surveying out in the experimental range.

the only subject that I was really good at was physics, resulting in most improved out of the whole school. So, I always knew that I wanted, and was also capable of, getting a degree in engineering.

Some of my hobbies growing up were always to be outside in nature. I've always been amazed by the type of tranquility that you can find with mother nature. My favorite activities to do are fishing and hiking. Back home, I was only twenty minutes away from Pinnacles National Park, so I would really enjoy the ten-mile hike from Soledad to Hollister. I was also very close to the ocean back at home, so I've always been a huge fan of fishing in saltwater for stingrays and leopard sharks.

I was so blessed with the opportunity that Dr. Peterson gave me to work on a Caltrans project during my first semester at Fresno State. Caltrans provided a research project for me to study different types of ground control configurations. I have learned a lot! I helped set up a Geodetic Network, performed static surveys, established elevations at all ground control points, as well as scanning. Given the opportunity to work with Dr. Peterson has really given me an edge on some of the cool equipment we get to use as surveyors out in the field. When the summer started, we had done most of the survey work at the site in San Joaquin Experimental range.

I was offered by Dr. Munjy to help out with some of the processing work that needs to get done once we have raw images from the drones to be able to create 3D maps of the area and study the different ground control configurations. I worked with Pix4D, PhotoScan, Python and a few other programs to help out. Being able to get the outside data collecting experience as well as the processing side of the work has made me a very versatile student and has also gave me an edge in the photogrammetry perspective of Geomatics. To this day I am still helping out with the research for that project but will soon expand my horizon with a new project.



MY ENGINEERING ROADMAP

WRITTEN BY JUSTIN PENDLEY

My name is Justin Pendley. I have been attending Fresno State for four years. I originally came to college majoring in Civil Engineering. During my second semester, it is requirement to take GME 15. After studying material in this class, I changed my major to Geomatics Engineering.

I went on a field trip in my Civil Engineering 85 class to an engineering firm. My concern was how often they usually go to the field for projects. They answered, "field work is needed for about one to two times throughout a few month-long projects. I like to be in the

field a lot, so this is another reason for my choosing Geomatics Engineering.

I have a strong interest in construction, so, I am minoring in Construction Management. One day, I hope to be a project surveyor or safety chief. Safety is an important aspect in my life. I want to go home at the end of the day knowing my crew and I are going to be prepared for the next day. My hobbies involve woodworking, building/Inventing, sports, and playing video games. Some things I do are salvage old electronics and try to bring a new life into them. I take the dc motors and other parts (glass screen) from broken printers I find near the dumpster around my apartment complex. Currently, I am getting involved in electronics; Motors, LED's, Sensors, Arduino based things. Soon I will be learning the raspberry pi. Over the past couple weeks, I have been learning sketchup and revit for my CM classes. I modeled a small table and then over thanksgiving break, I built it. I think of myself as a maker, I enjoy crafting convenient things to make my life easier. I have had two internships with Leica Geosystems and PG&E both which are Geomatics related. My internship with Leica was incredible because it was in Georgia and I got to make a road trip out there which was life-changing. The internship consisted of doing a Boundary Survey, Level loop, and a traverse. We also did a lot of laser scanning, as well.

Our supervisor worked tech support, so he was really knowledgeable about the equipment and eventually I did a couple of the support calls. My internship with PG&E was also great. We did a Dam Settlement up at the courtright reservoir. We did a couple Pole line staking jobs. We pulled three fifty to sixty hour weeks in the Mojave desert staking out a pipeline. Well, this is basically me and what I like to do. I'm signing off.



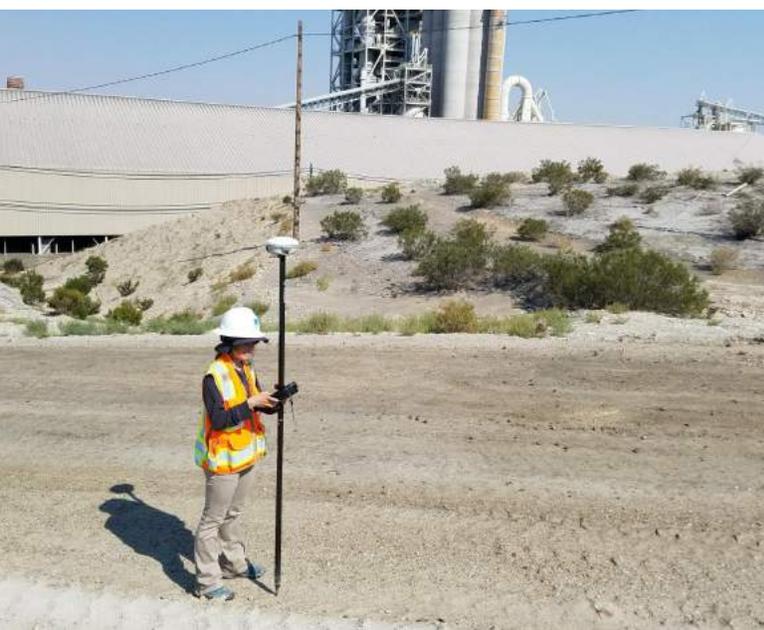
FIRST SUMMER INTERNSHIP

By Julianne F Warmerdam

Everyone told me to get an internship. I told everyone I would. My inside self told me “no way, you’re not ready, you don’t know enough yet, wait until next summer, you’ve only just started, you have plenty of time...” The excuses were endless. I had only heard of Geomatics Engineering less than a year before and would only have two semesters of school finished by the time I started an internship. I couldn’t possibly be useful to any companies yet. Surely waiting another year would be a smarter decision. Despite all my rationalizations, a little piece of me knew I wanted an internship that summer. I allowed this little piece to stay alive in my mind, just in case I needed it eventually.



That little piece drove me to hand out my resume to a handful of professionals at our student-run Geomatics Engineering conference in January 2017. “Maybe something will come of it, maybe something won’t,” I thought. I didn’t allow myself to care too much or I knew I would sabotage or overthink my way out of it somehow. When I got a phone call from Morton and Pitalo that spring, I was excited, but still hesitant. I went into the interview with an open mind and learned more about surveying, people and myself than I had bargained for. I was so inspired by the interview and thought I had a good chance of getting the job. When I found out my classmate got the internship, I was





happy for her, but also felt the sting of failure. I scrutinized the interview in my mind and wondered what I should have done differently. Then I reminded myself that I didn't really need an internship this summer and let my mental struggles go. But that little piece stayed with me.

When I got the email from PG&E a few weeks later, I had already decided I would continue working at my current job at Tenaya Lodge for the summer. There was no chance PG&E would hire me, I figured, but it would be good interview experience, so I emailed them the time I was available the following Friday. The week trudged forward and the interview became less of a priority. I wasn't going to go. I hadn't even sent my resume like they asked. However, they emailed me confirming my interview time two days before the interview and I felt bad to cancel on them, so I finally fully committed.

I went into the interview fairly relaxed because I knew I wouldn't be hired. I wasn't concerned with how I performed. Incidentally, this made me much more open and honest about who I was and how much experience I had. I told them I had no surveying background had only just started school, but could be trained to do anything they needed. One of the interviewers made me feel better about my lack of experience, but I was sure there were many other interviewees who were more qualified than me. The day I received the phone call from the PG&E recruiter offering me the internship at the Fresno office was a day of ecstasy and profound disbelief. How? The disbelief became so real that I refused to believe I was actually hired until the day I started.

Working for PG&E turned out to be more challenging and more rewarding than I ever expected. The first week pushed me past a number of my limits and I cursed myself for pursuing an internship at all. I knew I wasn't ready! I was in the field almost every day - something I originally wanted - but I didn't realize how constantly I would be around others, with little time to myself. We traveled to Merced often, to Los Banos, Coalinga, Caruthers, Manteca, Bakersfield, San Bernadino, Taft, Topock (Arizona), Sonora, Bass Lake, Courtright and Wishon Reservoirs. It was incredible experience, but my quiet, introverted self didn't

know how to handle so much socializing. I went through many phases of being overly talkative and burning myself out to being too quiet and feeling disconnected. All along that little piece that opened the door for an internship, quietly encouraged me in the background. I knew I could handle this challenge, I just had to persevere. In the midst of my internal turmoil, I was gaining invaluable, hands on surveying experience. I learned how to do topographic surveys and how easements worked. We hiked across mountains, through dense brush and poison oak to locate section corners by traversing and GPS. We completed three dam settlement surveys (Bass Lake, Courtright, and Wishon) by measuring control points, traversing and leveling. We didn't stop until our error was inside the tight parameters given to us.

I learned how to measure the catenary curve of power lines with the total station, and how to handle windy conditions. We dug up monuments on country roads and staked new power pole locations. We staked fence and gas line locations on the outskirts of Edwards Air Force Base, where my mother spent some years of her childhood. I learned how to scan substations, how to set up the control points in such a way that the final scan image would be stitched together with sufficient data. I never expected to learn so much and owe huge gratitude to my co-workers and supervisors, who never hesitated to teach me and answer my endless questions. The last few weeks were a whirlwind of out of town trips to finish the dam settlement surveys and before I knew it, summer was ending and school was starting soon. The last day of my internship was spent on a foggy ocean side cliff near Diablo Canyon, scanning the unusually protruding rocks for a geologic, fault line study. As we set up our control points I found myself reflecting on the whole experience of my summer.

I realized that my perseverance had paid off in multiple ways. This unexpected internship with PG&E had challenged me to understand surveying better, to be more open and honest about who I was and taught me about what I want in a career. I learned that putting myself out there was a positive thing even if it didn't yield results immediately. It's a summer I will never forget and always cherish. The fog lifted by the end of the day and as we put our equipment away in the truck, the sun was out, the tide was high and a couple of horses were grazing nearby. It was an idyllic end to a satisfying summer of learning.





JULIANNE

4CREEKS INTERNSHIP

By Shayne Nicholas



In accepting an internship with 4Creeks, I felt as though I had a general idea of what I would be doing day in and day out, and for the most part my assessments were accurate. Being that I have never done this kind of work in my life and only ever learned about the theories in class, I lacked a certain level of real world experience. The engineers and staff at 4Creeks were very welcoming and open to helping me gain the experience necessary to be competent in Land Surveying. As a new recruit to the Survey department I was placed where there was the most work. Together with Randy Wasnick P.L.S. and Matt Limas (who combined have 20+ years of surveying experience) I would conduct some of the office work related to Land surveying. This is where I gained valuable real-world

experience on several processes that include; drafting topographic surveys, writing and interpreting legal descriptions, calculating closures, preparing final maps, and over viewing plans submitted by other organizations. Out of all of the office work I enjoyed drafting topographic surveys the most, however it can be quite tricky having not been on site at some of these locations (I appreciate google earth a whole lot more now because of it). When we started slowing down in the office I switched over to work with Eris Soto out in the field. Eris has been surveying since the early 2000s. I learned a lot about construction staking during this time frame which just so happened to be the hottest part of the summer. Being able to get out and practice land surveying on job sites as well as learning a lot about the “why” behind the way we do certain things was very helpful in understanding my curriculum more fully. I am very grateful for the people at 4Creeks for employing me as an intern and gifting me with an immeasurable amount of on the job training, moving forward I hope to continue working with professionals in this field and gaining more experience.

Here is a list of jobs I worked on at 4Creeks:

1.) Construction Staking.

- a. Setting property corners.
- b. Building Monuments.
- c. Staking
 - i. Sewer
 - ii. Storm
 - iii. Road
 - iv. Rough grade
- d. Topographic Survey

2.) Office Related Work

- a. Drafting Topos.
- b. Legal Descriptions.
- c. Calculated Closures.
- d. Map Checking.
- e. Finalizing maps.

INTERNSHIP

By: Zaida Munoz



During the summer I had the incredible opportunity to work at KPFF Consulting Engineers in Portland Oregon as a survey intern. I was fortunate to have met John Davis, an associate of KPFF, at the CLSA Conference in Sacramento. He informed me about their internship program and encouraged me to apply. I had visited Portland once before but only for a few days and I was thrilled at the chance to spend a summer there.

As the survey intern at KPFF, I was able to do a combination of field work and then also come back to the office to draft. From day one, I was given a topographic survey and from then on, the work continued. I believed that I had plenty of knowledge with AutoCAD but after the first week. I learned so much more thanks to my coworkers who helped answer my many questions. Being able to work on real projects is very intimidating but at the same time I see it as: Everywhere you go, there something always something new to learn.

This gave me the opportunity to put everything I had learned in past classes to use and see projects where the theories I had learned about where put into action. By the end of the summer, I was working on writing legal descriptions even though I had not even taken the curse work in school yet.

Since returning from Portland, I have started a new semester at Fresno State and began working at O'Dell Engineering in Fresno.

Interest in Geomatics

by Jose Ojeda

There are a lot of things that I love about what the geomatics department and what it has to offer. I envision myself dedicating most of my life in this field that is, of course, until I retire. What I find funny about it though is that I never actually knew anything about surveying until my first semester here in Fresno State. To start things off my intentions were originally veered towards Civil Engineering, mainly, because I have always had a passion to be part of a city development. Before I transferred, my previous counselor, Mark, asked me what my interests were(I still had no clue where I was headed.), I shared my keen interests with him. He told me to consider Civil Engineering.

I met my criteria and although everything was fun, I would often think of what exactly I can settle with since there are a lot of potential fields to branch off of. For some reason I had a bit of trouble registering my first semester in Fresno State and I ended up taking GME 15 by accident. I wanted to set a good impression my first year in this university so much that I studied intensely all the details of GME 15. I was completely stoked and encouraged to pursue Geomatics Engineering and surveying! Looking back at all the other classes from community college, I realize that none of those courses were not even comparable to GME 15. I am a bit outraged that I, legitimately, had to be in a different school in order to see what other career options are out there.

Being an intent person when it comes to my interests, I was determined to change my major from Civil Engineering to Geomatics Engineering as soon as possible. I asked everyone around on how to get myself more involved in the program. I was making all the right connections, I met a lot of people in such a short time and I even ended up participating a lot in the geomatics conference my first year! I have never felt so committed and legitimately part of a great team in such a long time. I am literally addicted to being involved with the Geomatics program. I

have no clue why every single GME course has felt so easy in my time being here rather than stressful. I enjoy every aspect of the GME courses.

I guess I haven't actually said what the things are that I love about surveying but if you get to know me, I am pretty sure we would have a long conversation about it. So yeah, this is how I got enticed to join the program and why I often want to bring it into a casual conversation when I'm around my best friends during a BBQ!



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