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Final Draft

The Social life of a Creek

San Anselmo Creek Park Redesign

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The town of San Anselmo with its long history of flooding plans a major flood reduction project along the portion of the creek that runs through downtown San Anselmo. The Town Council is hosting a contest for project proposals that is open to the public. This paper is a research assessment that identifies key elements of social connectivity, flood reduction strategies, and design approaches that can be addressed in the proposal. To understand the required social connectivity needed for the redesign, we assessed two other creeks, Peri Park in Fairfax, CA. and Natalie Coffin Greene Park in Ross, CA. We interviewed different types of users to understand what makes these two creeks successful public spaces. We also assessed the two creeks for 3 connection strategies as defined by Chia-Ning Yang in *Inviting Spontaneous Use into Urban Streams: Lateral Connectivity, Vertical Connectivity, and Longitudinal Connectivity*. We conclude our study by incorporating our learnings into a design proposal for the creek that aims to promote social connectivity and inform the public about flood reduction and restoration efforts.

1. Problem Statement

The site is San Anselmo creek in Creek Park, San Anselmo, CA. San Anselmo creek has a long history of flooding. In a recent flooding event on December 31 of 2005, the creek overflowed its bank and rushed down San Anselmo Avenue, damaging various businesses, homes and town facilities. This flood cost an estimated \$30 million.

In September of 2018, a \$17.4 million San Anselmo flood control project was certified by the Board of Supervisors. Part of that project includes the tear-down of 634-636 San Anselmo Ave, a business building that straddles the creek and restricts water flow at the corner of Creek Park. We got to know this project through Matt Smeltzer, an engineer/geomorphologist from geomorph DESIGN company and the author of the San Anselmo Creek Restoration Project. As stated in the project, the removal of that building and the following restoration of that land could take about 50% off the overbank flow from the street. As a result, the removal will open up the creek and the park to the public.

Social connectivity, “the communication and movement of people, goods, ideas and culture along and across rivers”(Kondolf et al., 2016), is quite weak in Creek Park. Based on the interviews we did, few people know about the park or are aware of the existence of San Anselmo Creek in the park. With the San Anselmo flood control project in progress, we envisioned the new park to be a community gathering space. In this paper, we’ll focus on enhancing the social connectivity of the community with the San Anselmo Creek through creek restoration research and design.

2. Methods or Study Approach

We used four different methods (literature review, interview of a professional, case study, social connectivity mapping) to study the different spontaneous uses of a creek. The methods are listed as follows:

2.1 Literature Review

In order to learn about the site and form research methods, we did literature review of three different aspects. Firstly, we did history review of San Anselmo creek based on the information from an article from Marin Independent Journal (San Anselmo's Officially Envisions Creek Becoming 'Centerpiece' of Ross Valley), the online website of San Anselmo's Historical Museum and a book (San Anselmo by Judy Coy). Secondly, we referred to the definition of social connectivity in the paper "the social connectivity of urban river" (Kondolf et al., 2016) and thus formed our social connectivity mapping method. Thirdly, we learned from the paper "Inviting Spontaneous Use into Urban Streams" (Yang, Chia-Ning, 2004) and established our case study method.

2.2 Interview of professional

Our method to approach the professional was fluid with the process of research. The methods of communication included dialogue via email, a field trip, personal interview, hands on site assessment with printed Maps, and design consulting from an engineer perspective. Matt Smeltzer, an engineer and geomorphology consultant, and he has worked restoration projects in Marin County for many years. Interviewing with him offered us valuable information and understanding of our site. We had two site visits with him. The second site visit, Matt gave us a detailed tour of the site and pointed out critical structures that needed to be re-evaluated, demolished, restored, re-designed, or kept in tact.

2.3 Case Studies

We studied two precedents that Matt Smeltzer recommended (Peri Park, Fairfax, CA and Natalie Coffin Greene Park, Ross, CA) (Figure 1) to understand the relationship between users and creek and the factors influencing that relationship. Both of the parks are located in the Ross Valley watershed offering

public access to creeks. We learned about their backgrounds through the introduction of Matt Smeltzer. We did one full day of field observations for each of the precedents, and collected data through stationary activity mapping and conducting interviews.

Stationary activity mapping is a method to survey public activity. By mapping what people are doing at a space at a given time, we could get a “snapshot” of different activities in those creeks. For our stationary activity mapping, we recorded the location and activity type of users in both parks. We referred to Chia-Ning Yang’s paper as a standard to document the different activity types.

For interviews, we drafted a questionnaire (Appendix A) about user experience of the park, and interviewed 11 people for the Peri Park, 7 people for the Natalie Coffin Greene Park.

2.4 Social Connectivity Mapping

Learning from the paper “the social connectivity of urban river” (Kondolf et al., 2016), we developed our own social connectivity mapping method, which differ slightly from of four aspects: longitudinal, lateral, vertical and visual. The visual connectivity aspect is an addition to the three connectivities as we felt it was a great opportunity to add another dimension.

In this paper, longitudinal connectivity refers to the linear pathway along the length of San Anselmo Creek. Historically, the longitudinal connectivity was important for rivers as a major transportation method. Nowadays, the emphasis of longitudinal connectivity has shifted from transportation to recreation. “New forms of local longitudinal connectivity are regaining importance, such as the ability to continuously walk along river banks by introducing footpaths along the river’s banks and the ability to pass continuously in canoe or kayak facilitated by removal or retrofitting of outdated dams and other such obstacles to navigation.” (Kondolf et al., 2016)

Lateral connectivity includes the paths connecting people to the park and the activities along the floodplain. It focuses on two parts: how people communicate to the river and how people communicate across the river.

Vertical connectivity is defined as the various human activities that could happen in relation to the height above the water (i.e., instream to banktop). Vertical connectivity focuses on what spontaneous uses occur along the river.

Visual connectivity is a visual opening of a space that encourages engagement and promotes visual appeal to the human eye. This strategy focuses on designing a visual amenity that serves both as a visual attractor and community hub.

We made social connectivity mapping (including plan diagram and sections) based on the four concepts above for the two precedents.

3. Results

3.1 Case Study

3.1.1 Peri Park. Fairfax, CA., Nov 20th, 2018

Peri Park is a neighborhood park that is just outside of the downtown Fairfax, and is close to the Fairfax Pavilion, the Fairfax Farmers Market, and other local hot spots. The park is very open to the public. People entering from Park Road will pass a nice redwood and walk to the waterfront easily and comfortably. The riverbanks with gentle slope makes the area spacious and relaxing. There are several facilities along the creek, like picnic tables, BBQ grids, some exercise game equipment, playgrounds, tennis courts, and a multi-function stage. Although there is no river transport and only one bridge between the banks, with the gradual slope along it, the vertical and lateral connectivity are well ensured for smooth access and activities encouragement. For the longitudinal connectivity, all the access points are connected by loop pathways. Part of the loop is lower to the creek on the gentle slope, and the left is on a higher hill with dense vegetation, with a bridge connecting these two parts. (Fig 2.)

Interviewee: Mary and Corina, twelve years old (Fig 3.)

They are from nearby neighborhood, within ten minutes walking distance. They came for the park not for the creek, but sometimes they play across the creek when the water level is shallow and easy to

cross. They visited the park for ten to fifteen minutes few times a month. They choose to come to this park instead of others because it is close to their house and they like the playground.

Interviewee: Two Policemen

We met them while they did the regular checking for the park. “The park is busy through the week and many children show up at around three pm after their classes. A yoga class is held in the morning at the tennis court, and people come for picnic, BBQ, and some exercise.” Some special events are held in the park throughout the year like concerts and open markets.

Interviewee: Peter, Ryder, Jake, and Den (Fig 4 & 5.)

When we saw them, they were biking cross the creek and playing in the playground. They are all twelve-year-old children from a neighborhood one mile biking distance. One of them come here everyday, and others are around once a week. They usually come to the park to play since it’s a good spot for hide and go seek. The suggestion they made for the park was to add more turf to be able to play more.

Interviewee: Howard, 40 something

He was the only person that we saw who was in the creek and stayed for a while. He was hired by government to measure the water flow from the pipe into the creek annually, and he was there before raining days. The creek for him is pretty and with gradual slope, and the only thing he would like to improve is to remove the non-native plants along the bank.

Interviewee: Emily and Amy, 20&21 year-old (Fig 6.)

These two have came to this creek park for the third time in a year. It was where they had their first date and have been coming to the park since it is a special place for them. They both felt that the park should not have any modifications and like it just the way it is. They thought the creek park successful is because of many options for different activities.

Conclusion:

The park is quite successful with good vertical, lateral and longitudinal connectivity, proving that these connectivities are vitally important for urban activities. Promoting all levels of connectivities and providing sufficient recreational facilities should be considered in the future in our project.

3.3.2 Natalie Coffin Greene Park. Ross, CA., Nov 20th, 2018

Natalie Coffin Greene Park is next to Phoenix Lake (reservoir) in Ross, and it is part of the Mt. Tamalpais Watershed, which is the primary source of drinking water for residents. To remain the quality of drinking water, the park is limited for daytime recreational use like swimming, hiking, horseback riding, biking, and fishing. The banks are steep and not easily accessible, with undeveloped vertical and lateral connectivity, few people will go down to interact with water. There is a trail along the river, but the one way trail is not connected back to all enter points. (Fig 7.)

Interviewee: Kira, 37 year-old (Fig 8.)

Kira was the first person we met in the park. She usually drives three miles from Greenbrae to hike or mountain bike. Sometimes she come here by bike instead of car due to limited parking space. This park is really popular so usually it will be crowded and no parking place for car. She loves Natalie Coffin Greene Park because it is peaceful, beautiful and was enough shade. There are great bike routes and untouched natural resources. She hopes that this place can keep untouched, have some restoration only if it is needed.

Interviewee: Greg's family, 53, 45, 9, 7, and 4 year-old (Fig 9.)

Greg and his family came from Washington DC to visit family. They dropped by this creek park because it is only a fifteen minutes drive to where their family live. They come here twice a year and usually stay one to two hours per time walking with kids to the Phoenix Lake. They love this place, and their only complaint is that there are three groups of users: dogs, horses, and bikers using the same way at the same time so make the way becomes messy and unorganized.

Interviewee: Joe, 60 year-old

Joe came to this place after he dropped his son off, and he is from around 8 miles away. He usually jogs, walks, hikes, or relaxes next to the lake around once per three weeks. He thinks the park is great, but the parking space and the restroom is not enough for visitors.

Conclusion:

People went there for exercise, like jogging and biking, and most of them were attracted by Phoenix Lake (reservoir) (Fig 10.) . Because of the highly regulated preservation of fresh water, there is no vertical connection at all, people could not get close to the creek or interact with it. As the result, the park is relatively natural and intact. It is the ecological character attracted people to the park.

In conclusion, this precedent is meaningful to us as it reflects the importance of high-quality ecology in rivers and creeks. However, the bad connectivities also will limit the possibilities for any human activity, so a balanced design is really important to a creek park.

3.3 Social Connectivity Mapping

3.3.1 Longitudinal Connectivity Analysis

San Anselmo creek flows through the Creek Park. Most of the creek is uncovered, but some of it flows under the buildings and the bridge on its west side (Fig 12). The floodplain of San Anselmo Creek is quite narrow (about 60ft) in the Creek Park. As you could see from the long profile (Fig 11), in dry seasons, some parts of the creek is very shallow, while some others are quite deep. It's neither possible to walk along the creek longitudinal without wetting your feet, nor pass continuously in canoe or kayak.

Currently, the longitudinal connectivity of the creek is incomplete. Although there's a road-level trail on the east side of the creek, the west side of the creek is totally blocked by the stores. The lush vegetation on both sides of the creek also impacts the view of the creek from the trail.

Descending from the stairs, there are several broken "trails" on the west side of the creek. They are not "trails" in a strict sense, but you could walk for a while until the trail meets the water. Different

from the view of the road-level trail (which is heavily blocked by vegetation), the view of the creekside trail is great, but there's no flat space for people to take a rest. In the end you need to go backtrack or descend from another set of stairs if you want to explore more of the creek.

3.3.2 Lateral Connectivity Analysis

There are several ways to access to the Creek Park. For the public transportation, people can communicate through shuttle bus (route 25, route 27, route 68 and route 228) to arrive next to the north entrance of San Anselmo Creek Park, or bike along the city bikeway, which will also lead them ride through three crossing bridges of the park and finally to the north entrance. Except for bus and bike, this park allows 40-45 cars parking, so it is also easy for people to communicate by car. There are two main entrances for car and nine entrances for pedestrian. The main park entrance at west side is hard to access and notice, however, the most accessible entrance at north side is under emphasised.

In the park, San Anselmo Creek reduced to narrow canals and was hidden between vegetation and buildings, the lack of space for riverbank made it hard to establish continuous walking path along both side of the creek and the path to get close to the water, only through three crossing river bridges and several concrete stairs could you get to the waterfront. Hence, The restoration of riparian corridors and direct, looped lateral access are important and need to be considered when we redesign this park.

3.3.3 Vertical Connectivity Analysis

The vertical connectivity focuses on the variety and frequency of what spontaneous uses along the river (Fig 14.). In the westside of the creek, buildings were built very close to the creek (Fig 19.) and even four buildings were built on top of the creek(bridge buildings, Fig 15&16., which is the one being demolished), which all lead to the lack of vertical connectivity. As buildings are commercial use, so the public access to the creek is very limited. Further, some private backyards which was built above the creek seems needs proper management and regulation(fig 19.). The elevation between the creek and the ground floor is around 15 feet. Those factor challenged the vertical connectivity on the west side of the

creek, which cause little spontaneous uses along the west riverbank. However, the tear-down of 634-636 San Anselmo Ave will open a public access on the west side of the creek, and it will be the best spot to improve the vertical connectivity in the westside and potentially creek crossing.

In Creek Park, , people sit on the bench, cross through the bridges, walk around, but no one is down to the creek. Because of the value and importance of the parking lots, the floodplain has limited spaces. Overall the east side, river bank is quite steep that connected to waterfront by staircases only. The tight and steep floodplain along the river discourage activities to happen. Only in cross section B (Fig 17.) is there a spacious, multi-function lawn (Fig 22.) leading to a wood deck and a concrete staircase to the waterfront. People hold small concerts, community gatherings, and picnics here (Fig 21.). It would be better if the creek could be integrated into the park. With 90 foot wide with 18-foot level change, a gradual slope direct to the waterfront could be developed at the spot while keeping all the social function, thus enhancing the vertical connectivity and the floodplain capacity. In the cross section C (see fig.), the slope is about 60%, with around a 20-foot level change, and well planted native trees and bushes. With the diversity of the vegetation, instead of using the existing concrete staircase going down, an elevated wood ramp and stair functions better to create a wildlife observation path to improve the vertical connectivity. Change the simple access into an wildlife and native plant experienced path that arouse the interaction between people and the environment. In the cross section D (Fig 19.), there is the staircase that goes down to a wood deck and then leads to the waterfront. The wood deck is in good condition, but the connection afterward to the creek is mostly ruined. The wood deck is around four-feet lower than the sidewalk and is a very welcoming space to invite people going down to relax and watching the creek. At the end of the stair, concrete remains formed a dam for the creek that creates a peaceful pond. It is the best spot to encourage spontaneous uses near or in the creek. With better landscape design intervention, the spot could have wildlife catching, skipping stones, and friends or family gathering (Fig 22.).

3.3.4 Visual Connection Analysis

One of the major factors that deters people from entering the creek is the visibility. Seen in the figure 23, the San Anselmo Creek is hidden by buildings. However, the county of Marin will be removing the building seen in front to make way for the flooding reduction project. This will allow more space to open for the floodplain, but also generate access physically and visually to the residents of San Anselmo. In turn produce more consciousness about river restoration and the importance of best practices of creek maintenance and process.

4. Discussion

In this section, we will choose four places as the demonstration spot to develop landscape design for improving lateral, vertical, longitudinal, and visual connectivities.

4.1 Longitudinal connectivity

For longitudinal connectivity, we proposed to create a trail loop around the creek in the park. On the east side of the creek, the trail could be just above water. People could get to and exit the trail through the stairs. Existing broken trails would be connected through landscape redesign. Wooden platforms will be added to some point of the trail. Walking along this trail, people could get close to the water, touch it and have fun in it. On the west side of the creek, we're going to establish a boardwalk trail behind the stores. (Fig. 25) At present, there's no longitudinal connectivity on the west side of the creek. The vegetation is also too lush and messy. With the new boardwalk trail, people could get access to it through the stores, and walk along the creek. There could also be a patio behind the stores where customers could enjoy the view. The design will not only benefit the people by providing great views of the creek, but also benefit the stores through attracting more customers with an improved creek environment. As a result, there will be a trail loop and a passageway into the Creek Park, offering different creek experiences to the visitors.

4.2 Lateral connectivity

To improve the lateral connectivity of the park, the design we propose aims to re-emphasise the north side entrance. (Fig. 27) We chose this place because it is the easiest entrance to access to go into the park. It is right next to the bus station with parking access. However, the existing entrance is hard to see, let alone notice a creek inside and it is also dangerous for pedestrians since there is no clear distinction demarcations for vehicles and pedestrians. The redesign can include 1) A visible iconic gateway signage that can be read by people so they know this is the entrance of the San Anselmo Creek Park. 2) Continuing the same planting species and paving from the riverside walkway to the entrance to create a visual cue to the river. 3) Different pavement types to allow a more pedestrian friendly system, slowing down the car speed and providing safe entrance way for pedestrians. The visible and safe entrance will attract more people to come to the park and enhance the lateral connectivity between and park and the city.

4.3 Vertical connectivity

To enhance vertical connectivities, we choose the multi-function lawn area (Fig 29.) the most frequent using by people to demonstrate the improvement of the vertical connectivity of San Anselmo Creek. It will be the most effective spot to start a change for its high visibility. We propose to extend existing lawn to the creek directly which highly increase the visual connectivity and vertical connectivity. For keeping the function of the existing wood deck, we proposed a concrete platform closer to the creek. Thus, we bring the creek back to San Anselmo, and make the creek much opener to the public. People can enjoy the view of the creek from the lawn, and kids can walk from the lawn to the creek easily. The welcoming space not only encourage the spontaneous uses but also widen the floodplain to help decrease flood to occur.

4.4 Visual connectivity

To increase visual connection, we propose to create an open space design that serves both as a social connection hub and as a visual connection to the creek. This space will be a great opportunity to

extend the Creekside Pizza and Taproom and other nearby businesses with the creek by installing a bridge over the creek, vegetated terracing, informative signage, a gradual path to the creek, etc. The biggest opportunity of this space is to serve as an iconic visual cue for the San Anselmo community.

5. Conclusions

The city of San Anselmo will inevitably move forward with a new a major flood reduction project in the heart of downtown. Although this project is still in it's preliminary stages, we believe that the recommendations made in this paper can help the city of San Anselmo with adequate data to generate a community and scientific process to inspire the design.

This paper proposes to use different methods to understand the site from an ecological and social point of view. This paper presents various methods like: Case studies, professional consulting, interviews, and analysis of lateral, vertical, longitudinal, and visual connectivity to understand the best practices in creating an ideal urban creek. We hope that our research can generate an “urban creek, which are therapeutic value, development effect, raise environmental awareness, from pace attachment and preserve “wilderness”, and interact with the stream processes.” (Yang, Chia-Ning. 2004).

We plan on moving forward with this project and see it all the way through to submit a design proposal to the city of San Anselmo in the spring semester. Having a personal relationship with a professional engineering/geomorphology consultant from the area combined with our own research, we have enough data to generate a design that satisfies the vision of creating a major flood reduction project.

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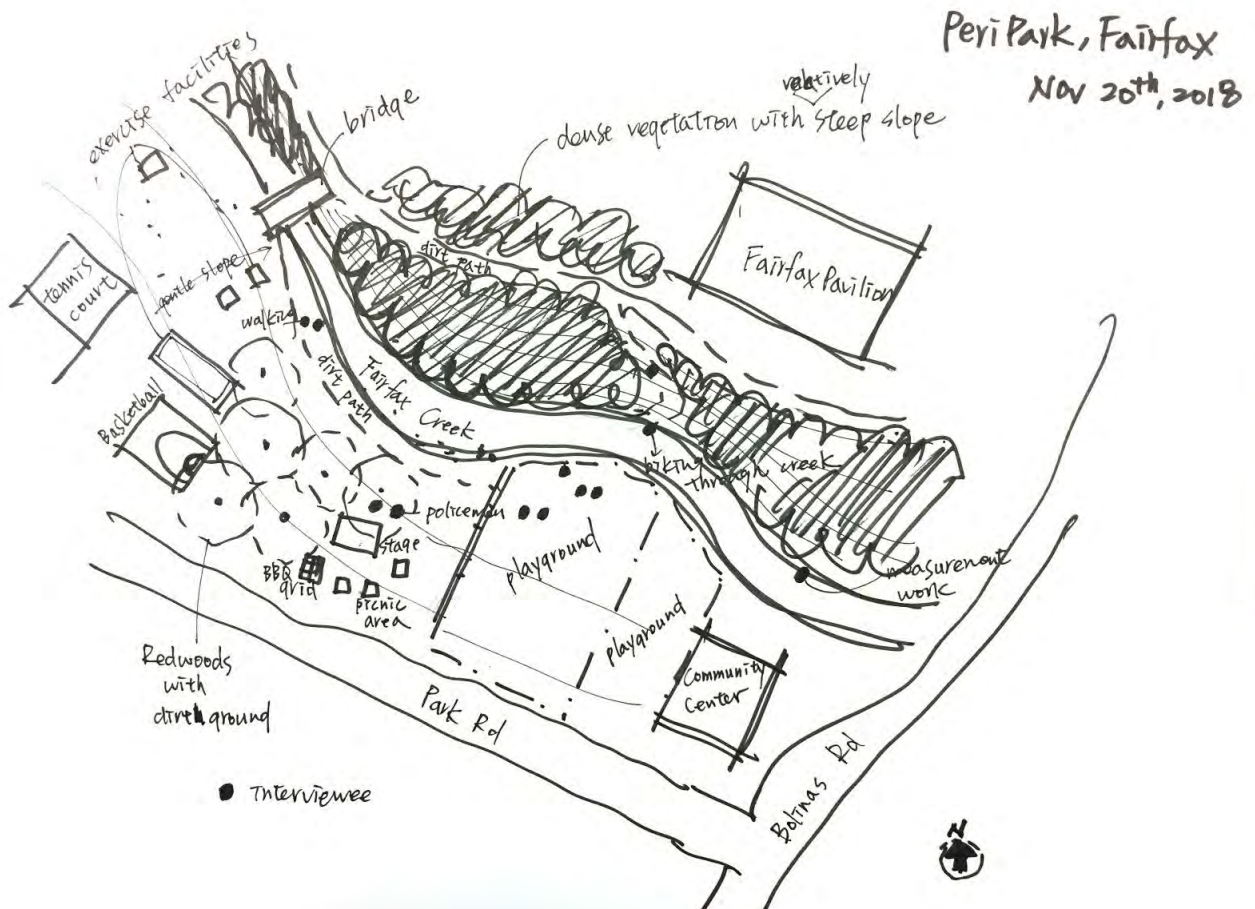
G.Mathias Kondolf, Pedro J.Pinto. *The social connectivity of urban rivers*. *Geomorphology* 277(2017)

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7. Figure Captions



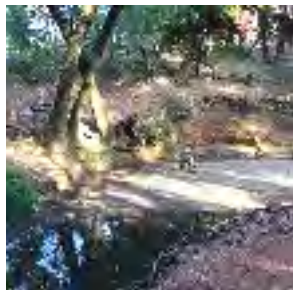
(Fig 1. Location of Creek Park and precedents)



(Fig 2. Stationary mapping of Peri Park)



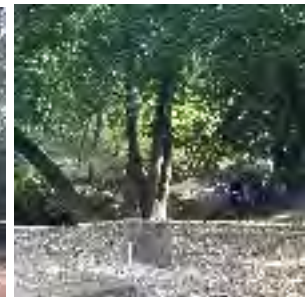
(Fig 3. Mary and Corina)



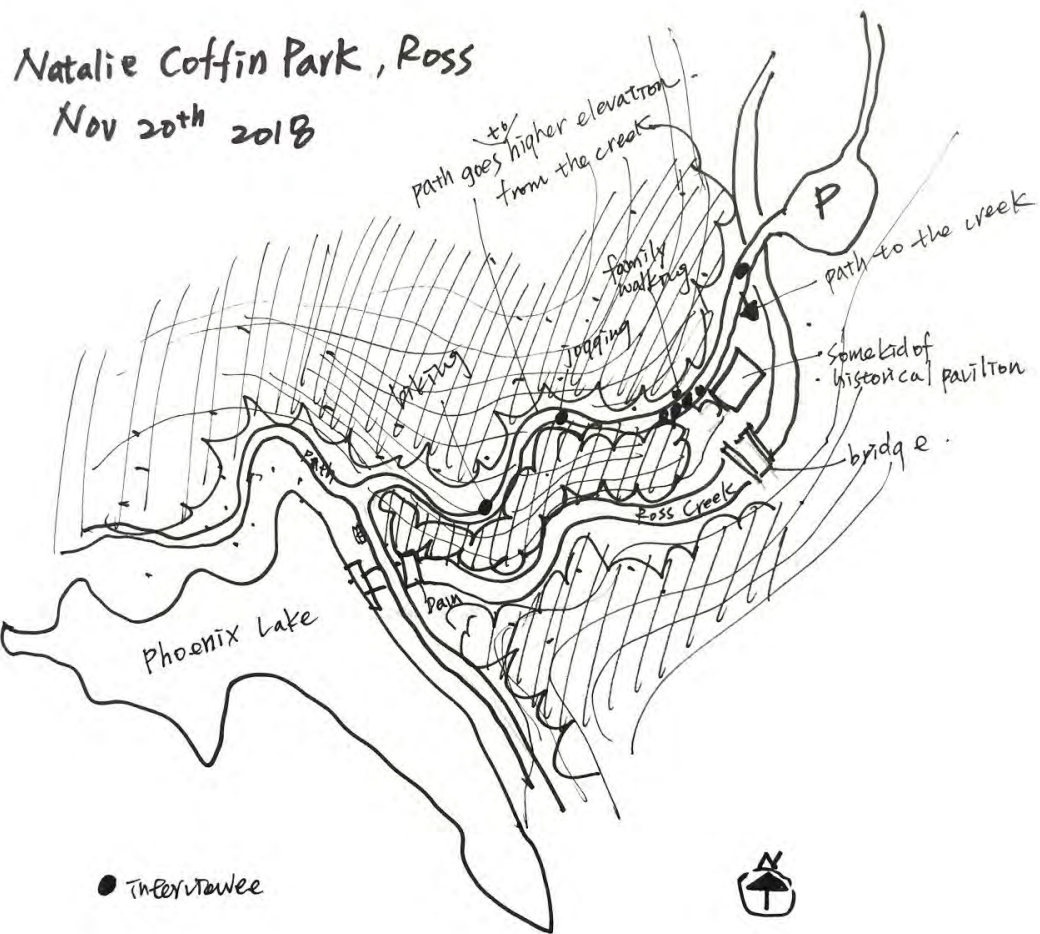
(Fig 4. Peter)



(Fig 5. Jake and Den)



(Fig 6. Emily and Amy)



(Fig 7. Stationary mapping of Natalie Coffin Park)



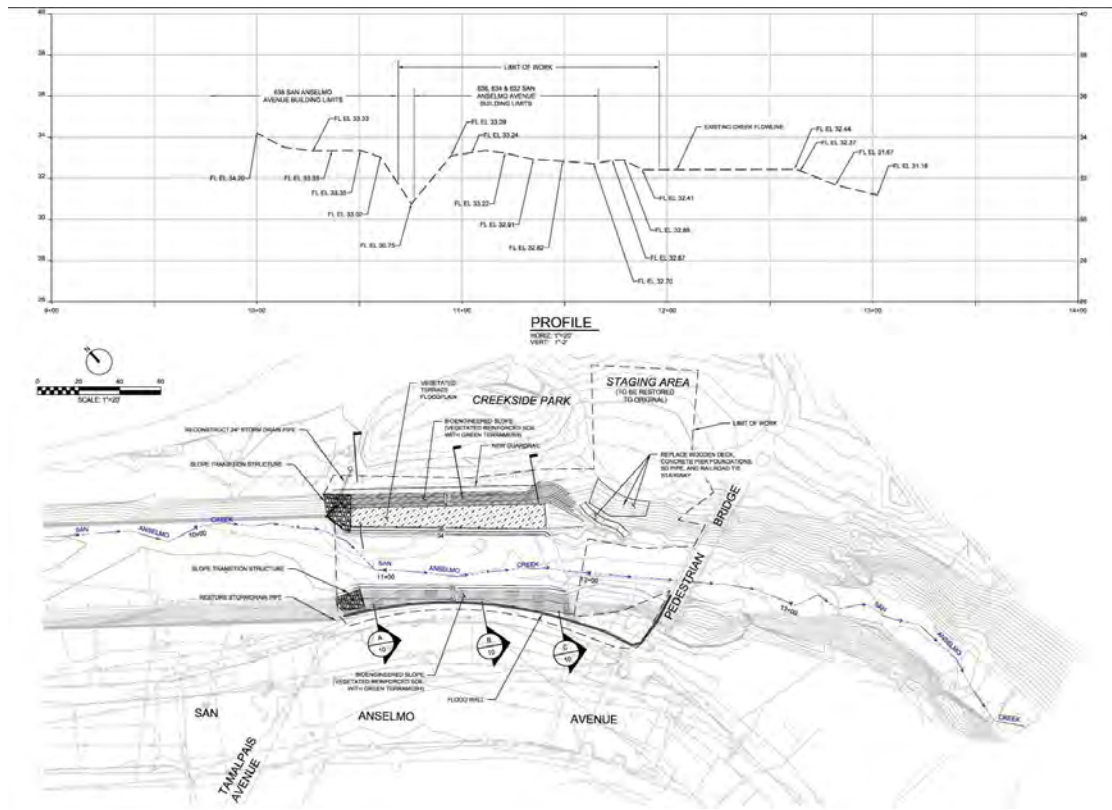
(Fig 8. Kira)



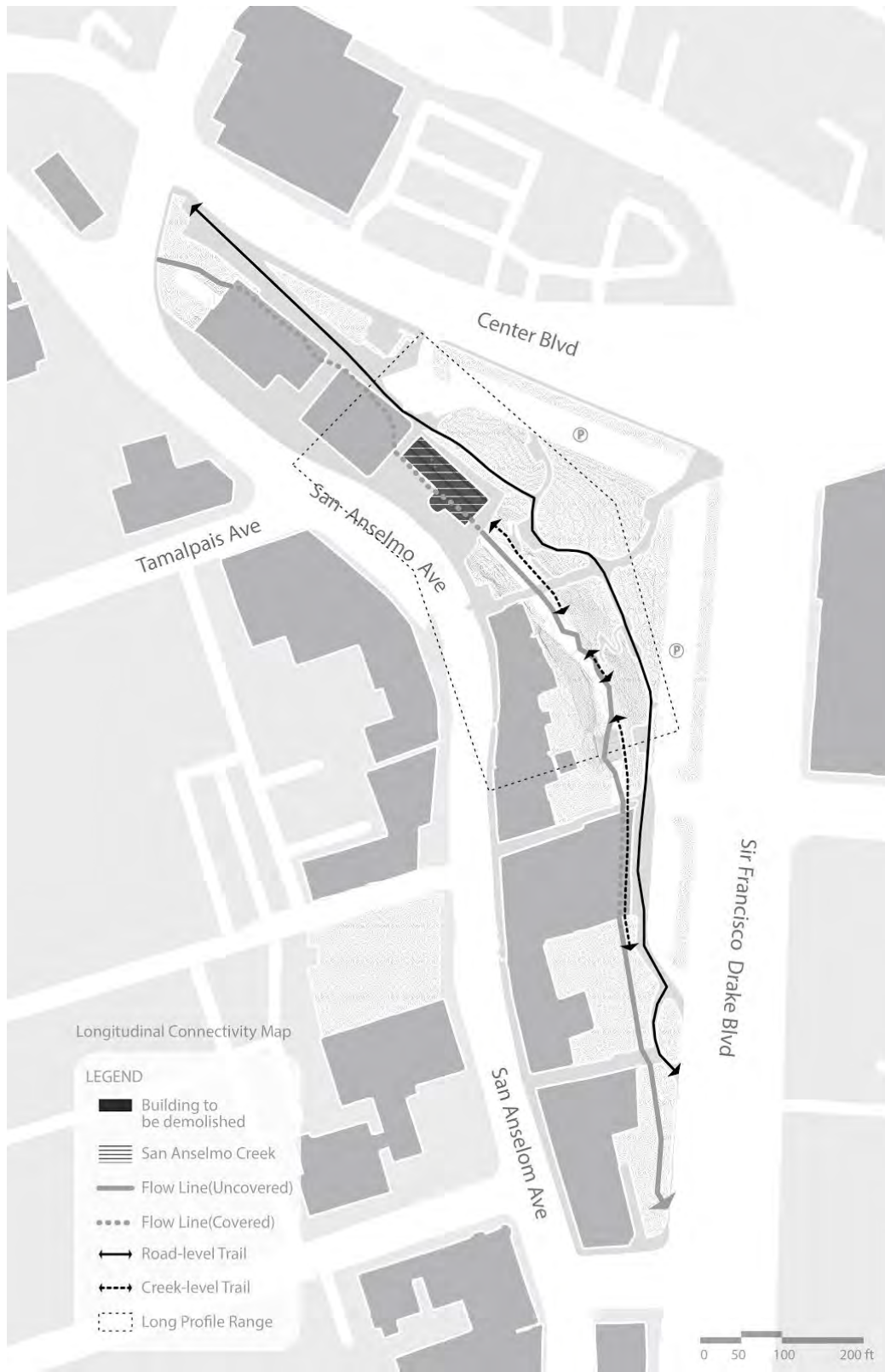
(Fig 9. Greg's family)



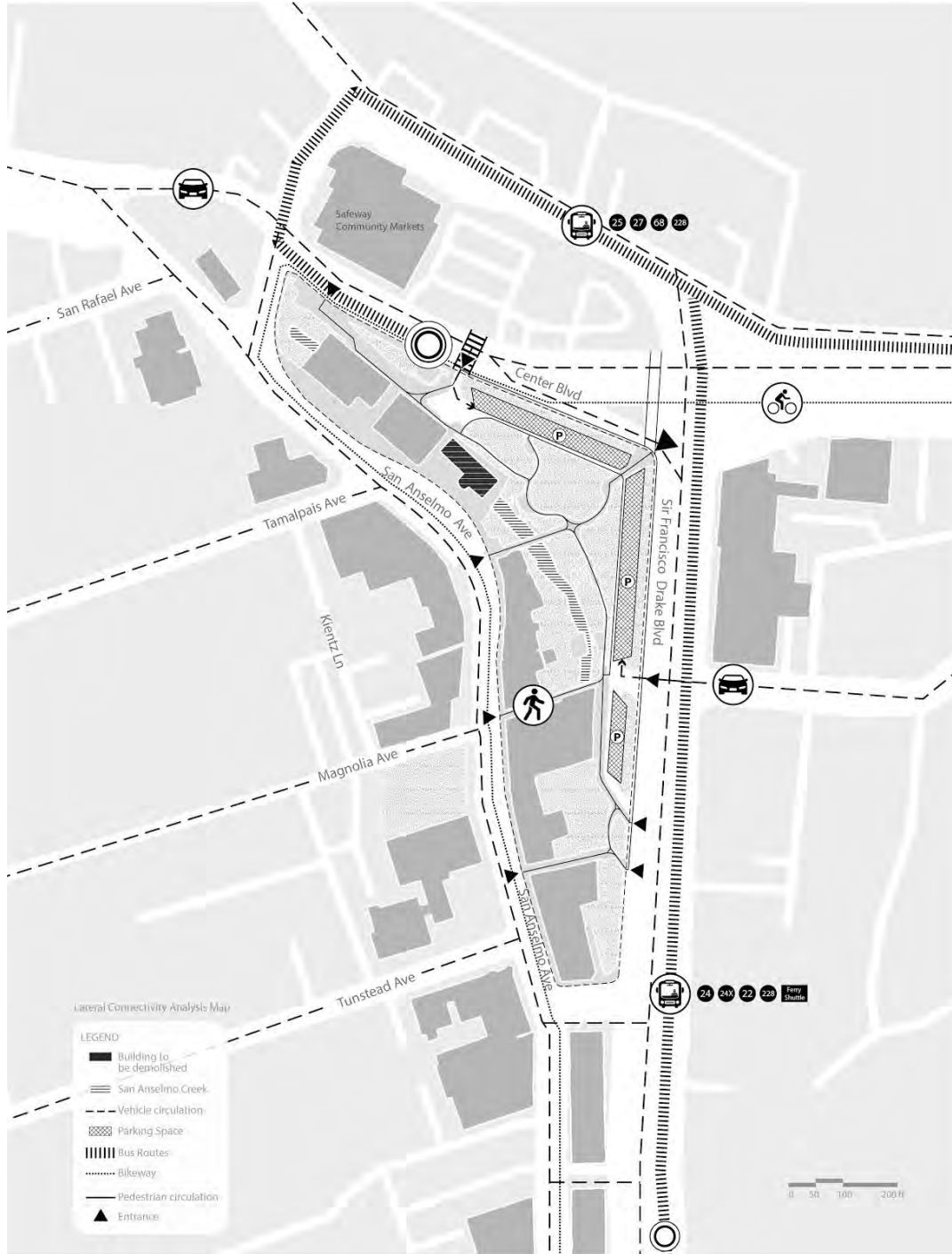
(Fig 10. Phoenix Lake)



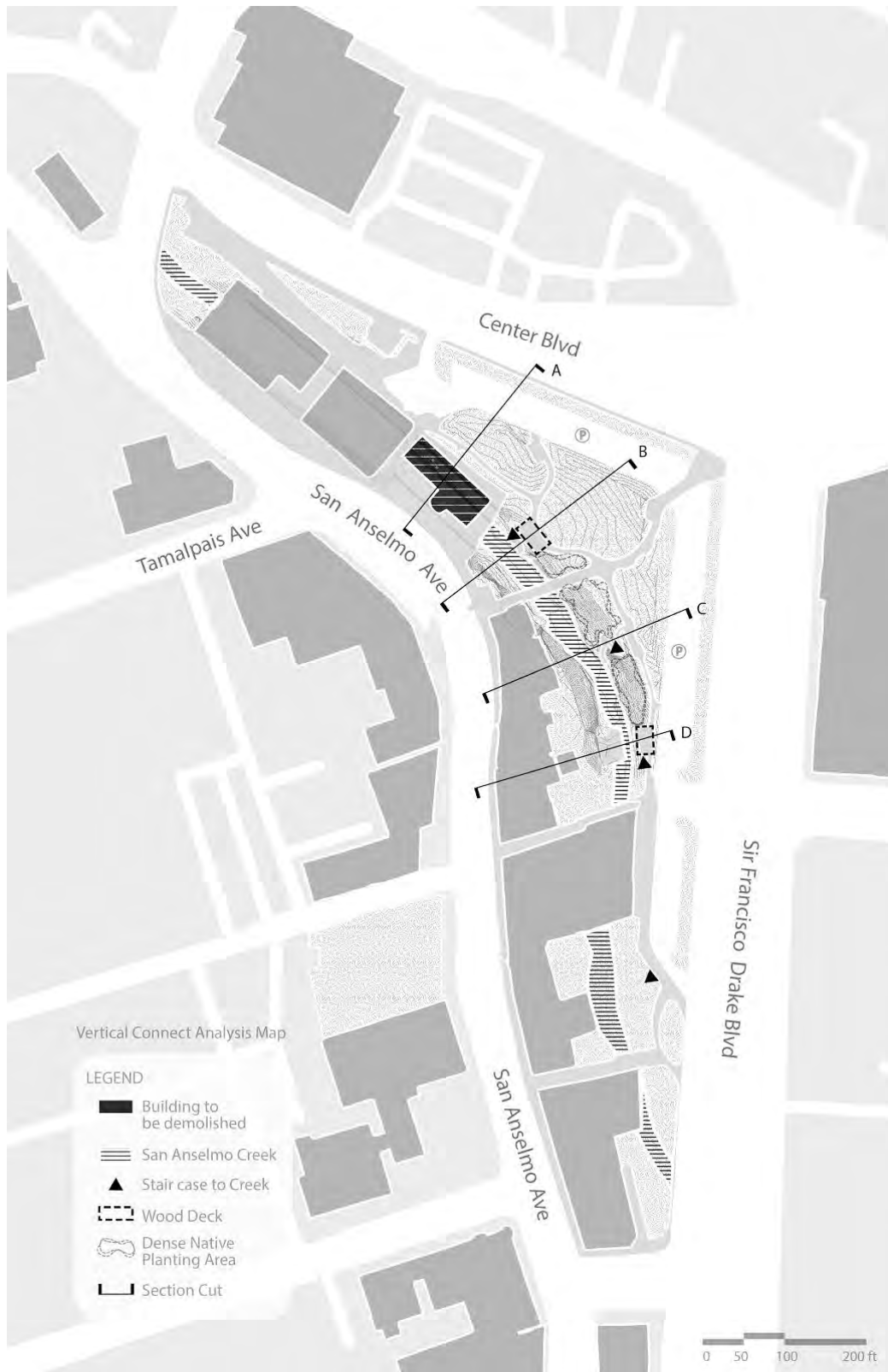
(Fig 11. Long Profile Source: Marin County)



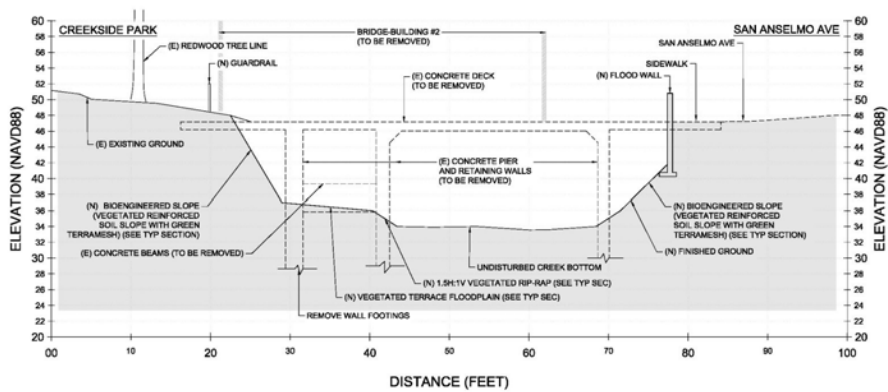
(Fig 12. Longitudinal Connectivity Map)



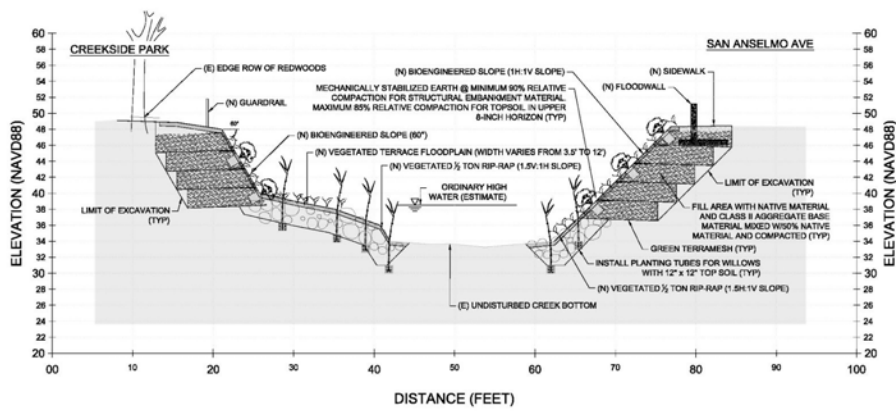
(Fig 13. Lateral Connectivity Map)



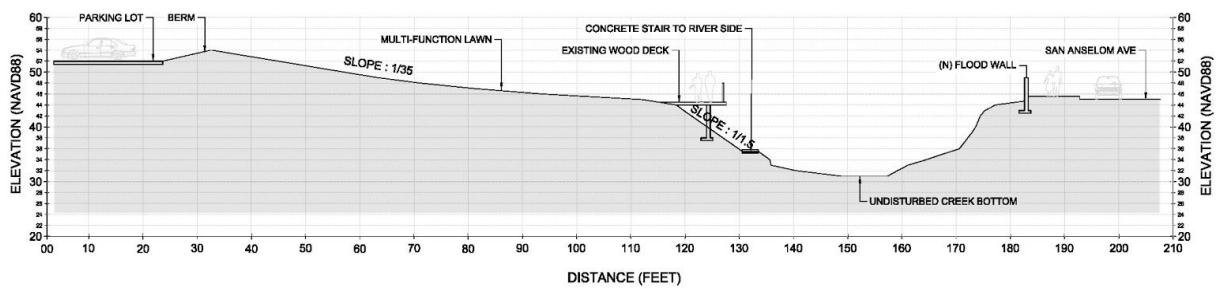
(Fig 14. Vertical Connectivity Map)



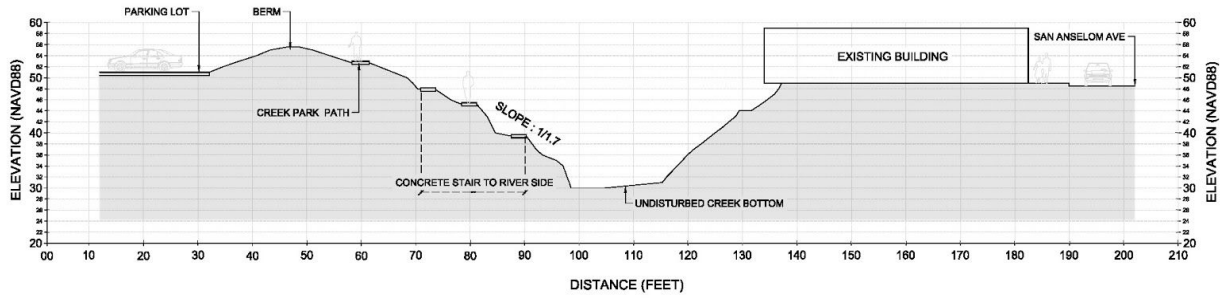
(Fig 15. Cross Section A)



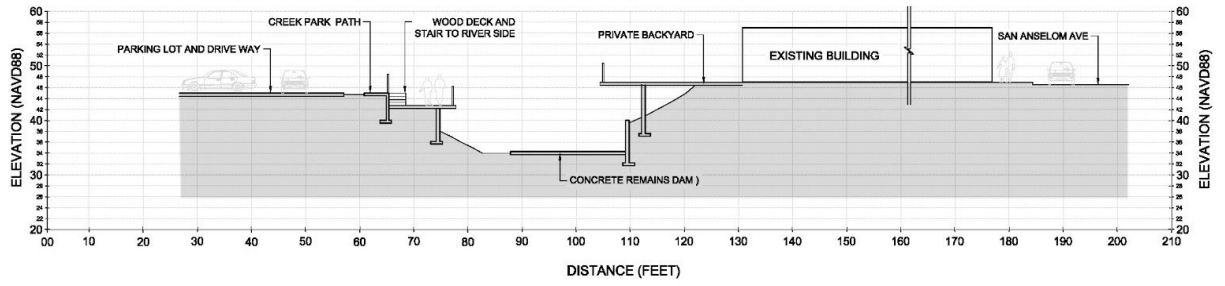
(Fig 16. Cross Section A (Treatment after demolishing the bridge building))



(Fig 17. Cross Section B)



(Fig 18. Cross Section C)



(Fig 19. Cross Section D)



(Fig 20. Multi-function lawn)



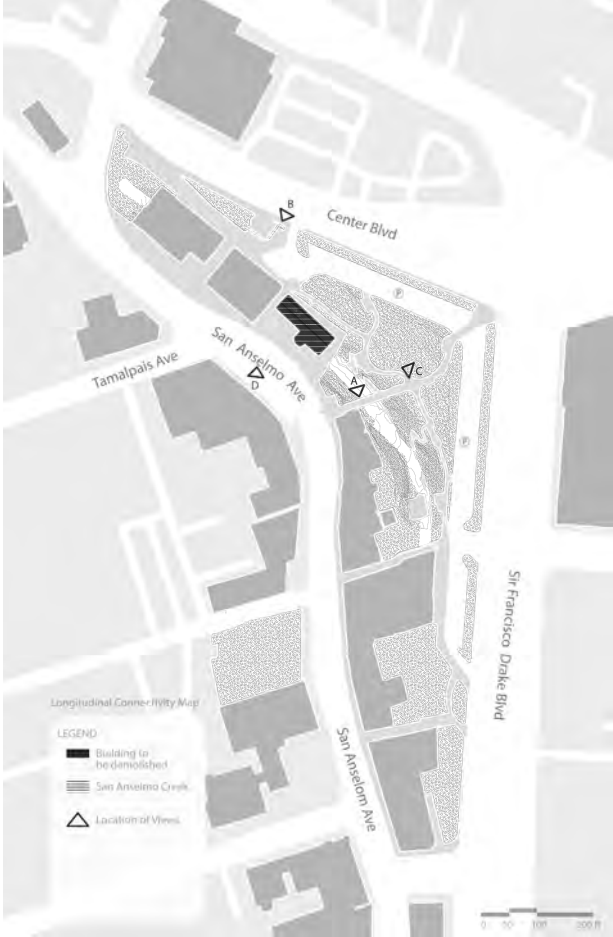
(Fig 21. Movie at the park)



(Fig 22. the native plant river bank and the dam)



(Fig 23. Front view of structures to be taken down)



(Fig 24. Location of demonstration spots)



(Fig 25. View of the store from the creekside for longitudinal improvement, labeled A in Fig.)



(Fig 26. Longitudinal Connectivity demonstrated perspective.)



(Fig 27. View of the park entrance for lateral improvement, labeled B in Fig)



(Fig 28. Lateral Connectivity demonstrated perspective.)



(Fig 29. View of the lawn beside the creek for vertical improvement, labeled C in Fig)



(Fig 30. Vertical Connectivity demonstrated perspective.)



(Fig 31. Front view of Creekside Pizza and the Lappart business that will be demolished for visual improvement, labeled D in Fig)



(Fig 32. Visual Connectivity demonstrated perspective.)

8. Appendices

A. Questionnaire

Park: _____ **Interviewee's name:** _____ **Date:** _____ **Time:** _____

Basic information

Where do they from? _____

What age are them? How many people? _____

Gender? _____

Purpose

What do they like to do here? _____

What attract them here compare to another creek park? Nice water quality? Convenient? Or nature? _____

How often do they visit here? How long will they stay here per each time? _____

Suggestion

How do they feel about the change of the park during decades? _____

What would they suggest to improve the park? _____

Where is the other creek park they like? _____

Do they know our site (Creek Park San Anselmo)? What's their opinion about it? _____
