CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT 725 FRONT STREET, SUITE 300 SANTA CRUZ, CA 95060 PHONE: (831) 427-4863 FAX: (831) 427-4877 WEB: WWW.COASTAL.CA.GOV



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3-15-0144-A5 (SAN LORENZO RIVER CULVERT, CITY OF SANTA CRUZ) SEPTEMBER 9, 2021 HEARING EXHIBITS

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FIGURE 1A: Project Location



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FIGURE 2: San Lorenzo River Mouth Conditions

San Lorenzo River - example of barrier beach open condition (March 16, 2002). Photo from California Coastal Records Project



San Lorenzo River – example of barrier beach closed condition (October 1, 2008). Photo from California Coastal Records Project

SAN LORENZO RIVER Interim Lagoon Management Program INITIAL STUDY March 2015

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FIGURE 3: Examples of San Lorenzo River Channel Migration



Spillover channel condition, 2014. Photo by Conservation Collaborative.



Western channel migration example, October 2005. Photo from California Coastal Records

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DEFINITIONS

PROJECT OWNER:

APPROVED BY:



PROJECT ENGINEER: ENVIRONMENTAL SCIEN CONTACT: JEAN 0. TO PH: (510) 267-7158

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NAD 83 / NAVD 88 POINT TABLE					
POINT #	NAME	NORTHING	EASTING	NAVD88 ELEV	DESCRIPTION
91	SLR-M1	1814371.77	6119534.38	22.187	FD DISK SLR-M1
92	3B	1813611.29	6119518.91	15.267	CUT + ON CC
93	3A	1813495.37	6119544.65	19.119	SET DISC
94	2B	1812827.16	6119931.81	38.435	FD MAG NAIL TW
95	1A	1813610.86	6119809.60	9.931	SET DISC
96	1B	1813577.19	6119824.75	4.805	SET DISC
97	S-1237	1813539.01	6119545.39	26.815	FD DISK S1237
100	4	1813177.87	6119551.87	11.456	CENTER TARGET
102	2A	1812615.83	6119910.95	23.569	SET DISC





PROFILE	VIEW	E: HORZ. 1"=40';	VERT. 1"=8'
LEGEND:			
2	24" STEEL PIPE		(E) GRADE, SURVEYED BY IFLAND
6	3" STEEL PIPE		(2018) AND ESA (2018), SEE NOTE 6 (E) GRADE, SURVEYED BY ESA (2020)
			(E) GRADE, EAST (BLUFF SIDE) TOP OF TRENCH (2
∎ 、			(E) GRADE, WEST (WATER SIDE) TOP OF TRENCH (
VALVES, CLEANOUT A	ALVES, ULEANUUT AND I	*IN 2018, COMPLETE	AN ELEVATED SAND BERM (12+' NAVD88) LY COVERED THE EXISTING TRENCH AFTER STA 6+50.



OFFICE OF THE CITY MANAGER

809 Center Street, Room 10, Santa Cruz, CA 95060 • (831) 420-5010 • Fax: (831) 420-5011 • www.cityofsantacruz.com

June 11, 2015

Mr. Ryan Moroney Coastal Planner California Coastal Commission Central Coast District Office 725 Front Street, Suite 300 Santa Cruz, CA 95060

Dear Mr. Moroney:

This letter is in response to your request for additional information regarding actual and potential damages associated with the flooding, which results from stagnate high waters when the San Lorenzo River Lagoon is closed during the summer months. Following is a summary of actual and potential damages based upon our understanding of impacts to City infrastructure and private infrastructure in the adjacent areas of the lagoon.

San Lorenzo Boulevard

San Lorenzo Boulevard, which runs parallel with the lower river, experiences weeping (water seeping up through the pavement or ground surfaces) soon after the closed lagoon elevation reaches five feet on the Trestle Bridge gauge. This continuous weeping from the pavement and ground impacts the roadway and traffic signal electrical boxes and overall creates unsafe conditions for the public. According to staff from the Public Works Department's Operations Division, over the past several years the City has expended \$80,000 annually in inspection, temporary maintenance, and general cleanup of San Lorenzo Blvd. as a direct result of the sustained high waters in the lagoon. Photos submitted previously to the Coastal Commission via the permit application depict the road and sidewalk damage that results from the flooding.

Levee Pump Stations

The levee has five pump stations with a total of twelve pumps that circulate water once it reaches an elevation of five feet at the Trestle Bridge. As a result of the sustained high waters in the

Exhibit 4 3-15-0144-A5 1 of 3 Mr. Ryan Moroney June 11, 2015 Page 2

summer months during long lagoon closures, the pumps run continuously until the lagoon elevation lowers through a breach. Continuous running wears down the pumps, requiring extensive maintenance and repair. According to the manager of the levee, two of the largest pumps required a rebuild at the cost of \$66,000. The remaining pumps will be evaluated this year, and the City is anticipating another \$100,000 in rebuild costs. It is estimated that the summer high waters account for over 50 percent of these damages, as the pumps run continuously in closed conditions and only sporadically during winter and early spring months. If the elevation exceeds six feet and beyond over a sustained period of time, like in the summer of 2014, those rebuilds and repairs will be needed more frequently, at a higher cost to the City.

Private Infrastructure

Aside from the expenses already incurred by the City to repair damaged infrastructure, private residents and businesses are also impacted by the weeping. Attached is a map which shows the adjacent area that is prone to weeping at sustained lagoon elevations above five feet. The City has received calls from residents whose property have taken on significant water in their basements and yards. Additionally, business owners in Downtown Santa Cruz have submitted photos of their basements taking on water from the lagoon. In the more extreme scenarios, property owners may incur costs as small as \$300 to pump water out of their basements to as much as \$3,000 to repair foundational problems that result from weeping.

Finally, the Seaside Company has provided the Coastal Commission with information about weeping impacts on its operations at the Santa Cruz Beach Boardwalk. The Seaside Company has expended nearly \$300,000 to add pumping capacity and secure its outer walls to better secure its basements from flooding.

In total, the fiscal impacts to the City and community resulting from sustained high waters on the San Lorenzo may exceed \$200,000-\$300,000. The Interim Management Program provides two management activities that should significantly reduce these actual and potential damages and financial impacts.

Sincerely, Mark Dettle

Public Works Director

Attachment: Map

cc: Scott Collins, Assistant to the City Manager

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EDMUND G. BROWN JR., Governor CHARLTON H. BONHAM, Director





State of California – The Natural Resources Agency DEPARTMENT OF FISH AND WILDLIFE Bay Delta Region 7329 Silverado Trail Napa, CA 94558 (707) 944-5500 www.wildlife.ca.gov

May 1, 2015

Mr. Scott Collins City of Santa Cruz 809 Center Street, Room 10 Santa Cruz, CA 95060

Dear Mr. Collins:

Subject: San Lorenzo River Lagoon Interim Management Program Project, Initial Study/Mitigated Negative Declaration, SCH #2015042002, Santa Cruz County

The California Department of Fish and Wildlife (CDFW) has reviewed the Initial Study/Mitigated Negative Declaration (IS/MND) for the San Lorenzo River Lagoon Interim Management Program Project (Project). CDFW is submitting comments on the IS/MND as a means to inform the City of Santa Cruz (City), as the Lead Agency, of our concerns regarding potentially significant impacts to biological resources associated with the proposed Project and to provide recommendations on additional information to be included in a revised Final MND.

CDFW is a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) § 15386 with responsibility under CEQA for commenting on projects that could affect biological resources. As Trustee for the state's fish and wildlife resources, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and their habitat for the benefit and use by the people of California. CDFW also acts as a Responsible Agency pursuant to CEQA § 15381 based on its discretionary authority regarding Project activities that impact streams and lakes (Fish and Game Code §§ 1600 – 1616), or result in the "take" of any species listed as candidate, threatened, or endangered pursuant to the California Endangered Species Act (CESA, Fish and Game Code, § 2050 et seq.).

Project Location and Description

The Project is located on the San Lorenzo River extending from the confluence with the Pacific Ocean for approximately 700 feet upstream within the limits of the City of Santa Cruz. The Project proposes to prevent unauthorized river lagoon breaching and control water surface elevation (WSE) of the lagoon that forms at the mouth of the San Lorenzo River to an elevation of 5.0 feet using the National Geodetic Vertical Datum of 1929 to prevent localized flooding to public and private properties and infrastructure. The Project is designed to be an adaptive management program for addressing activities related to fisheries habitat, flooding, and public access and safety where the river mouth empties at Santa Cruz Main Beach. The Project includes two primary management activities to be implemented during the proposed three-year management period of 2015 through 2017 between May 1 and November 15. The two management activities include installation of a

Conserving California's Wildlife Since 1870

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temporary outlet channel that would be implemented each year in 2015 and 2016, and a head driven culvert (also considered temporary) that would be implemented in 2016 (if funding is secured) and 2017.

The temporary outlet channel would consist of a controlled drawdown of the lagoon WSE to prevent water from reaching the 5.0 foot elevations. The temporary outlet channel will be constructed up to six times during the season as needed to draw the lagoon down to 3.0 to 4.0 feet, and then the channel will be closed. Construction and closure of the each temporary outlet channel would take place within a one day period. Typical channel dimensions would be on the order of 35 to 50 feet in width and 75 feet in length. The head driven culvert (culvert) will allow the lagoon elevation to reach 5.0 feet under normal river mouth closure conditions and then maintain that elevation through passive removal of water from the lagoon via overflow of surface waters through a small weir and infiltration through the barrier sandbar as an additional contribution. A series of three 4-foot diameter standpipes (risers) would be partially buried in the lagoon adjacent to San Lorenzo Point, and would be connected to a 450-foot horizontal culvert buried in the beach connecting the lagoon to the ocean. It is estimated the culvert could be constructed in less than two weeks.

Comments on Project Description

The IS/MND, under <u>Background: History of Flooding and Lagoon Breaching</u>, describes the facilities and infrastructure subject to flooding such as the Santa Cruz Beach Boardwalk (Boardwalk), residential streets, and the levee and drainage system. However, this section of the IS/MND does not adequately quantify or relate the extent of flooding to lagoon WSE. For example, the capacity of the existing levee and drainage facilities to accommodate and alleviate flooding is not clearly described. It is CDFW's understanding that the basement of the Boardwalk has been the first infrastructure to flood as lagoon WSE begins to rise. Recently, the Boardwalk upgraded its facilities to fortify them against flooding potentials that would begin to occur when the San Lorenzo River Lagoon reached a WSE of 5.5 feet. Any recent improvements in nearby infrastructure to protect against flooding should be clearly described and analyzed in the MND.

CDFW recommends the MND be revised to evaluate the feasibility and effectiveness of improvements to the City's storm drain system and levee drainage systems for the purpose of maintaining a higher WSE and reducing impacts associated with a reduced lagoon volume on special-status species within the lagoon.

The IS/MND states that the preparation of plans for the Project included a series of meetings with the state and federal resource agencies that included identifying management alternatives and that the final alternatives were identified as the Project's proposed management activities. However, limited discussions between CDFW and the City have occurred in regards to lowering the WSE to less than 5.0 feet or reductions to the temporary channel outlet dimensions, and during those discussions, CDFW expressed concerns with these activities. During these resource agency meetings, CDFW advised the City that in order to reduce impacts to special-status fish species, the 5.0-foot was the point

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at which no further reductions to WSE should occur. CDFW also indicated that temporary channel outlets should be constructed of dimensions in a manner to reduce the probability of uncontrollable lagoon draining events. Furthermore, an emergency permit issued by another agency for emergency mechanical breaching of the San Lorenzo River lagoon in September 2014 also addressed these concerns and included several special conditions, including one to ensure that the lagoon did not dewater below five feet. Therefore, as previously discussed with the City, CDFW recommends that the proposed Project, as part of the three-year management plan, specifies that the channel will be excavated at an angle from the shallowest part of the lagoon and face the appropriate wave-action direction to aid in re-closure, and will be at a minimum width of 10 feet, maximum depth of 2 feet, and length of 250-1,000 feet to minimize slope and outflow velocity and reduce the rate of lagoon drainage and risk of channel scour. Additionally, CDFW recommends the Project specify that channel excavation will retain a lagoon WSE of 5.0 feet as measured at the train trestle bridge staff gage.

Additionally, this section of the IS/MND (Page 5) states that the resource agencies and the City agreed to four objectives. To clarify, identification of overriding considerations for emergency actions (Objective 4) was not an objective to which CDFW agreed since flooding issues related to the WSE in the San Lorenzo River Lagoon are predictable and foreseeable.

Biological Resources

The IS/MND states that the San Lorenzo River Lagoon typically experiences intermittent "open" conditions (i.e. technically an estuary and not a lagoon) throughout the summer but does not discuss or evaluate the extent to which past illegal breaching has influenced this intermittent transition from a lagoon to an estuary throughout the summer season. The IS/MND discusses water quality impacts of extended lagoon closures based on data that may have been taken from one geographic location and sampled from the surface and bottommost points in the water column. This sampling protocol would not be representative of the entire lagoon throughout its extent nor of the entire water column. CDFW has concerns as to whether data have been extrapolated beyond a reasonable scope and whether any analyses of lagoon water quality data have accounted for timeinterdependency of samples and freshwater inflow. In addition, the Biological Assessment (Attachment 2 of the IS/MND) heavily references an analyses that has not been finalized due to potential flaws in study design and data analyses (i.e. Comparative Lagoon Ecological Assessment Project (CLEAP) Santa Cruz County, California, 2006 Draft Final Report). CDFW recommends that the IS/MND either strike these sections from the IS/MND and Biological Assessment or include sections on sampling design, sampling locations, sampling depths, timing of sampling, methodologies used for statistical analyses and goodness of fit testing (if applicable) and results from statistical analyses. CDFW also recommends (as discussed during past meetings with the City) that analyses and interpretation of lagoon water quality data would benefit from review by the National Marine Fisheries Service (NMFS) staff and/or other non-private experts in lagoon water quality dynamics.

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The IS/MND includes information on observed stranding and mortality of tidewater goby (*Eucyclogobius newberryi*) during the controlled breach for WSE drawdown that occurred in September 2014, and states that the San Lorenzo River lagoon encompasses 66 acres of habitat for the species. The IS/MND also concludes that habitat for the tidewater goby will not be adversely impacted but that indirect impacts may occur within the Project construction area. Tidewater goby is listed as endangered under the federal Endangered Species Act (ESA) and is a State Species of Special Concern. CDFW recommends that the impacts analysis on tidewater goby include loss of habitat by quantifying the changes in areal extent of inundated habitat at various lagoon WSE levels and that the IS/MND be revised to include compensatory mitigation measures to offset mortalities and loss of habitat for tidewater gobies.

The IS/MND indicates that steelhead (*Oncorhynchus mykiss*) and coho salmon (*Oncorhynchus kisutch*) may be present within the Project area, and that the Project may not be able to completely avoid impacts to steelhead and coho habitat. Central California Coast Evolutionarily Significant Unit coho salmon (hereafter coho) is listed as endangered under CESA and ESA. Central California Coast Distinct Population Segment of steelhead (DPS; hereafter steelhead) is listed as threatened under ESA and designated as a State Species of Special Concern. The IS/MND states that steelhead appear to prefer areas of the San Lorenzo River Lagoon that have deeper water relative to the rest of the lagoon and that they probably avoid the shallower depths to avoid predation by birds and to find areas with preferred cover and environmental parameters.

CDFW recommends that the IS/MND be revised to include an evaluation of impacts to fisheries resources, including:

- the relationship between reducing lagoon depths to the various proposed WSE levels and the ability of steelhead and coho to avoid avian and mammalian predators;
- the relationship between reducing lagoon depths to the proposed 3.0-foot WSE elevations and impacts to freshwater and lagoon volumes;
- the relationships between expected increases in solar radiation and temperatures throughout the lagoon's extent and steelhead rearing habitat; and
- compensatory mitigation measures to offset impacts from loss of habitat and cover from avian predators (e.g., seasonal installation of completely submerged cover structures for fish that span the majority of the water column).

CDFW recommends that the IS/MND be revised to include the methodologies to be used for monitoring of fish stranding during drawdown of WSE, and a complete mitigation, monitoring and reporting program. The mitigation, monitoring and reporting program should include the following:

 an evaluation of the volume of habitat conditions in the lagoon from data collected in multiple locations at intervals of 0.25-meter depths throughout the water column to evaluate lagoon water quality dynamics and evaluation of lagoon stratification;

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- 2) measures to evaluate direct Project impacts to fish;
- the number of qualified biologists to be used during activities associated with temporary outlet channel construction;
- avoidance, minimization and mitigation measures to be implemented for the different types of impacts identified; and
- effectiveness evaluations of the Project's avoidance, minimization and mitigation measures.

If surveys or monitoring indicate that coho are present at the Project site and take of the species cannot be avoided, then please be advised that an Incidental Take Permit (ITP), pursuant to Fish and Game Code § 2080 *et seq.* must be obtained if a project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the project. Issuance of an ITP is subject to CEQA documentation and analysis. Therefore, the IS/MND must specify impacts, mitigation measures, and a mitigation, monitoring and reporting program. If the Project will impact CESA-listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain an ITP.

Conclusion

CDFW appreciates the opportunity to provide comments on the IS/MND for the subject Project. If you have any questions, please contact Ms. Melissa Farinha, Environmental Scientist, at (707) 944-5579; or Ms. Brenda Blinn, Senior Environmental Scientist (Supervisory), at (707) 944-5541.

Sincerely,

St Ulle

Scott Wilson Regional Manager Bay Delta Region

CC:

State Clearinghouse Kim Sanders, Regional Water Quality Control Board – <u>kim.sanders@waterboards.ca.gov</u> Jacob Martin, U.S. Fish and Wildlife Service – <u>jacob.martin@fws.gov</u> Joel Casagrande, National Marine Fisheries Service – <u>joel.casagrande@noaa.gov</u> Gregory Brown, United States Army Corps of Engineers – <u>gregory.g.brown@usace.army.mil</u> Susan Craig, California Coastal Commission – <u>susan.craig@coastal.ca.gov</u> Ryan Maroney, California Coastal Commission – <u>ryan.maroney@coastal.ca.gov</u> Captain Don Kelly, CDFW Law Enforcement Division

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UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE West Coast Region 777 Sonoma Avenue, Room 325 Santa Rosa, California 95404-4731

May 1, 2015 Refer to NMFS No: 151422WCR2015SR00137

Scott Collins City of Santa Cruz Office of the City Manager 809 Center Street, Room 10 Santa Cruz, California 95060

Submitted electronically to SCollins@cityofsantacruz.com

Dear Mr. Collins:

Thank you and the City of Santa Cruz (City) for the opportunity to comment on the City's March 2015 Mitigated Negative Declaration (MND) for the *San Lorenzo River Lagoon Interim Management Program* (IMP) at the San Lorenzo River Mouth in the City of Santa Cruz. NOAA's National Marine Fisheries Service (NMFS) has reviewed the MND materials received on April 23, 2015. According to the MND, the City is considering the proposed IMP as a means to address longstanding conflicts related to federally listed species, their habitat, flooding, as well as public access and safety. The IMP includes two management activities to be implemented during the proposed three-year management period of 2015 through 2017: 1) a temporary lagoon outlet channel that would be constructed in 2015 and 2016; and 2) installation of a Head Driven Culvert that would be implemented in 2016 (if funding is secured) and in 2017.

Federally endangered Central California Coast Evolutionarily Significant Unit coho salmon (Oncorhynchus kisutch) and federally threatened Central California Coast Distinct Population Segment steelhead (O. mykiss) occur or have the potential to occur within the San Lorenzo River Lagoon. Additionally, designated critical habitat for both of these listed species occurs within the proposed project reach. The site also supports Essential Fish Habitat (EFH) for various life stages of fish managed under the Pacific Coast Groundfish Fishery Management Plan (FMP), Coastal Pelagic Species FMP, and the Pacific Coast Salmon FMP, pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSA). Given these sensitive public trust resources, NMFS expects the proposed project will be designed in such a way as to avoid, minimize, and mitigate impacts to ESA listed species, their designated critical habitat, and EFH, and, if possible, improve existing conditions for these resources. Depending on the project design and methods used for construction and implementation, consultation with the designated federal action agency pursuant to section 7 of the ESA, as amended (16 U.S.C. 1531 et seq.) and EFH consultation pursuant to the MSA would be expected. Listed below are NMFS' comments regarding the MND.



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Water surface elevation management

- Due to serious concerns regarding the quality and quantity of steelhead rearing habitat in the San Lorenzo River Lagoon, NMFS recommends the City manage the lagoon at a water surface elevation (WSE) of at least five feet (ft) NGVD29¹. It is NMFS' understanding that during net freshwater inflow of less than three cubic feet per second (cfs), the IMP would maintain the lagoon WSE at a depth of three ft. The lagoon WSE would only increase once net freshwater flow increases above three cfs. However, considering California's current drought conditions, there is concern that net freshwater inflow may drop below three cfs for extended periods of time, resulting in a WSE that would likely persist at three ft or lower. Further, the rationale for an outflow pipe with an elevation of three ft was not clearly described in the MND. Due to the potential benefits to steelhead and their habitat by increasing the lagoon WSE to five ft or more, we recommend that an analysis be provided that explores an increased WSE and decreased head difference.
- The MND states flooding occurs when the lagoon WSE is above five ft, but does not provide exact flood stage elevations for local infrastructure. The MND states that Boardwalk facilities have been flood-proofed (new pumps, resealing below-grade, and above-grade seawall), but a WSE where flooding now occurs at the Boardwalk or other City or federal facilities (*e.g.*, levees) is not given. The MND does mention the pump system at the levees starts at approximately four ft, storm drain and basements flood higher than five ft, and the theatre floods at seven ft. Therefore, it is unclear whether or not the lagoon could be managed at an elevation potentially greater than five ft, such as 5.5, 6.0 or 6.5 ft. Higher elevations would increase the extent and quality of steelhead rearing habitat (*i.e.*, increased depth) while potentially avoiding flooding of local infrastructure.

Freshwater conversion and manual valve operation

The Head Driven Culvert may increase the amount of time to fill the lagoon to a WSE of 5 ft, which could adversely affect the quantity and quality of critical habitat for rearing juvenile steelhead and coho salmon. While NMFS supports the concept of the Head Driven Culvert, how it is operated with respect to WSE and water quality is of concern. Ideally, after the sandbar closes from a tidally-influenced configuration, the lagoon would fill with freshwater to five ft as quick as possible. The report provided with the MND (Geomorphic and Engineering Channel Feasibility Study²) calculates the average time to fill the lagoon during the dry season when the Head Driven Culvert would be operational. Under normal conditions the report states that starting from a WSE of three ft, it would take approximately six days to reach five ft. Alternatively,

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¹ All water surface elevation levels discussed hereafter refer to the National Geodetic Vertical Datum of 1929 (NGVD29).

² ESA. 2015. "San Lorenzo River Lagoon Interim Management Program: Geomorphic and Engineering Channel Feasibility Study." Prepared for the City of Santa Cruz, January 2015.

the MND estimates that it would take approximately two to three weeks to reach five ft if the bottom risers of the Head Driven Culvert were operational (outflow approximately three cfs). NMFS recommends operation of a manually operated valve, combined with continuous water quality monitoring, to achieve relatively rapid filling of the lagoon to a maximum WSE while concurrently minimizing the duration and extent of water column stratification. For example, once the lagoon WSE reaches just under five ft, NMFS recommends that the trapped saltwater on the bottom of the lagoon be released through the Head Driven Culvert system by way of the perforated bottoms of the standing risers and a valve located on the horizontal drain pipe.

- The MND mentions a manual valve on the Head Driven Culvert that could be closed and opened, although a detailed description of the valve and its operation are lacking in the MND and associated documents. NMFS recommends the City provides a detailed description of the manual valve and its proposed operation.
- During drought conditions with a net freshwater inflow less than three cfs, the MND and associated documents state that the lagoon WSE would be maintained at three ft. It is the stated objective of the MND to manage the lagoon at a minimum of five ft, thus NMFS recommends the City implement a formal management plan for the manual valve(s). For the benefit of steelhead and other species, NMFS recommends the valve be closed or partially closed when needed to maintain the lagoon WSE at five ft and decrease stratification. We also recommend the City design a water quality monitoring program (or augment existing programs) to assess their valve operations.

Installation, demobilization, and salmonid migration

- According to the MND, installation of the culvert may occur in the spring after flood flows have subsided, but while flows are still high enough to keep the mouth open (20 cfs or more, typically before July 1). If this occurs, Mitigation Measure 2 states that the valve will remain closed (not in operation) until the City has decided that the first seasonal longer-term closure has started and the steelhead and coho salmon migration period to the ocean has ended. The MND states that this typically happens after July 1, but the date may vary depending on how dry the year is. It is unclear in the MND (pg.45) if the intermittent sandbar openings in spring are expected to be natural or due to the construction of a Temporary Outlet Channel. NMFS recommends the City clarify the cause of these intermittent sandbar openings (*i.e.*, Temporary Outlet Channel construction, or natural sandbar breach, or both). In addition, NMFS recommends the City provide information about the maximum rate of flow out of the Head Driven Culvert in order to determine the need for a Temporary Outlet Channel during Culvert operation (*i.e.*, what is the maximum rate flow (cfs) the horizontal discharge pipe can convey to the ocean?).
- The MND states that the demobilization and installation procedures of the Head Driven Culvert will be similar and will take approximately two weeks. Demobilization may occur in October or November, prior to the first major rainfall events, if practicable,

Exhibit 5 3-15-0144-A5 8 of 9 and installation may occur before July 1, as previously discussed. Although the timing of demobilization and installation and equipment best management practices (in the MND, Table 2) are intended to reduce impacts to coho salmon and steelhead, it is not clear whether or not the demobilization and installation activities during the construction periods will impact salmonid migration. NMFS recommends specific measures be designed and implemented for the demobilization and installation construction periods to avoid and or minimize any delay to salmonid migration.

NMFS appreciates the opportunity to comment on the MND and recommends the City continue to coordinate with us during the development of the project design. Please contact Joel Casagrande at (707) 575-6016, or joel.casagrande@noaa.gov, or Brian Meux at (707) 575-1253, or brian.meux@noaa.gov, if you have questions regarding these comments.

Sincerely,

Alecia Van Atta Acting Assistant Regional Administrator California Coastal Office

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Exhibit 5 3-15-0144-A5 9 of 9 (3) Flooding in basements of buildings along Pacific Avenue in Santa Cruz. The City of Santa Cruz received reports of flooding in basements of buildings along Pacific Avenue in Santa Cruz on September 14, 2014. Del Mar Theater photos show this effect.



Photo 1: Flooded Electrical Box

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Photo 2: Del Mar Theater Basement flooding



Photo 3: Del Mar Theater ground floor flooding

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Photo 4: Del Mar Theater storage area flooding

Additional land use conflicts with closed lagoon conditions include public access and safety for Santa Cruz Main Beach, an area visited by over 3 million people annually. Under closed conditions as described above, a spillover channel does eventually form and bifurcates the beach in a westerly direction (Figures 6 and 7). This can make lifeguard access to the ocean edge difficult and hazardous. The spillover channel is also attractive to inexperienced swimmers who wish to avoid the ocean and can have marginal water quality conditions as well as an uneven bottom and depth. These are additional concerns for City lifeguards.

A history of unauthorized and emergency breaching has been documented at the river mouth due to a variety of factors including the heavily populated beach and issues with flooding in the surrounding developed area around the river mouth. The river mouth is also known as a prime surfing location when sediments from the river mouth deposit offshore and south swells come in the summer months. These favorable surfing conditions have allegedly resulted in illicit barrier beach manipulation by surfers to encourage sediment transfer onto the sandbar at the river mouth (see Figure 8). All these circumstances have led to unauthorized breaches of the sandbar during the spring and summer, which adversely effect habitat conditions for species that utilize the lagoon, especially anadromous species.

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Photo 5: River water saturating Riverside Drive pavement and San Lorenzo River bikeway flooding, 2014. Photos by Revell Coastal.

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Photo 7: Flooded bike path at river

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Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
Biological Resources				
MITIGATION MEASURE 1: Avoid construction activities in the wetted areas of the lagoon, and implement fish survey prior to installation of the temporary outlet channel or head driven culvert, collect any tidewater gobies on the dewatered sandbars and in the outlet channel, and release them in a safe location.	 Prior to initiation of channel construction a small mesh seine (10' long by 4' deep by 1/8" mesh) will be used to survey the area that will be disturbed during construction. All monitoring activities will be conducted under the supervision of a biologist possessing a 10(a)1(A) recovery permit from the US Fish and Wildlife Service, specific to the tidewater goby. Any tidewater goby (TWG) present will be removed to a nearby area with water depth of at least 2.0 feet. Captured TWG will be held and transported in 3-5 gallon containers and provided with oxygen if needed. When the channel is completed and the lagoon is draining, biologists will survey the entire lagoon for stranded TWG. Surveys will focus on areas with dewatering sandbars typically found around the mouth, at the bend across from Jesse Street marsh, the east bank upstream of Riverside Bridge, Branciforte Flood Control Channel, and the area between Laurel Street and Water Street. Four biologists will be on duty to cover this extensive area and ensure that stranded TWG are recovered before they die or are captured by predators. All TWG found stranded will be enumerated and condition noted (live, injured, deceased, etc.). Live fish will be captured with small acuarium. 	City responsible for hiring qualified biologist to observe and implement mitigation in accordance with specified implementation actions. A report with findings of observed fish and actions undertaken will be submitted to the City Manager's Office, and City staff will transmit the report to all responsible agencies.	During installation of the Temporary Outlet Channel and Head Driven Culvert.	A report of activities will be completed following each channel construction event. The report will include a summary of the activity, timing of events, initial and final lagoon stages, photographs documenting the activity and areas where TWG were captured, photographs of captured individuals, description of areas surveyed, number of fish captured and released, number of mortalities, locations of fish capture, and activity of potential predators of stranded fish.
	nets. Fish will be held and transported in 3-5			

MITIGATION MONITORING PROGRAM - San Lorenzo River Lagoon Interim Management Plan

Mitigation Measure	Implementation Actions	Monitoring / Reporting Responsibility	Timing Requirements	Reporting Requirements & Verification of Compliance
	 gallon containers and provided with oxygen if needed. Fish will be released in water at least 2.0 feet deep in areas unlikely to experience stranding (i.e. with steeper banks). Prior to closure of the temporary outlet channel, the biologists will survey the channel and capture any TWG that may have entered. These fish will be returned to the lagoon and released. 			
MITIGATION MEASURE 2: If the head driven culvert is installed prior to July 1 st , delay the operation start date (i.e. when the valve is opened) until the City has decided that the first seasonal longer-term closure has started and the steelhead and coho salmon migration period to the ocean has ended. This typically happens after July 1 st , but the date may vary depending on how dry the year is. The culvert valve can be closed prior to the first major rainstorm of the year (when natural breaching would have occurred at the end of fall or beginning of winter). This will allow the lagoon to breach normally.	Actions specified in Measure and in the Head Driven Culvert Operation Procedures (ESA, May 9, 2015).	City responsible for monitoring conditions and insuring installation and operations occur within the specified parameters.	During installation of the Head Driven Culvert.	Documentation of date culvert operations started (valve open) and water levels.



Existing



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Proposed



Existing



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Proposed



Existing



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Proposed



Existing



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Proposed

EXISTING CONDITIONS SAN LORENZO POINT AT MAIN BEACH



Existing



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