Appendix F
SUPPLEMENTAL INFORMATION PROVIDED BY THE YUROK TRIBE OF THE YUROK RESERVATION

The information included in this appendix was submitted by the Yurok Tribe of the Yurok Reservation to Horizon Water and Environment on February 7, 2012 for use in the CEQA analysis for the MLPA North Coast Study Region. This information is included verbatim and was entirely written or compiled by the Yurok Tribe of the Yurok Reservation.

The following items are included in this appendix:

- Narrative for Inclusion in MLPA Draft Environmental Impact Report
- Exhibit A – Access
- Exhibit AC – Adverse Conditions
- Exhibit CD – County Demographics
- Exhibit HW – High Winds
- Exhibit L – Licenses
- Exhibit MT – Minus Tides
- Exhibit PS – Paralytic Shellfish
- Exhibit RS – Rough Seas
- Exhibit T – Turbidity
- Exhibit YD – Yurok Data

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NARRATIVE FOR INCLUSION IN
MLPA DRAFT ENVIRONMENTAL IMPACT REPORT

The North Coast Study Region is unique among the Marine Life Protection Act (MLPA) study regions for multiple reasons, including natural conditions, demographics, the presence of the largest natural resource-based tribal governments in California, continued subsistence harvesting and gathering by tribal members, and economic and health and safety concerns for tribal members related to those uses. These reasons, discussed in more detail below, together justify an approach tailored to the North Coast Study Region that is not bound within an approach used in the other MLPA study regions.

Natural Constraints to Recreational and Tribal Traditional Harvesting

Significant natural constraints, such as paralytic shellfish poisoning, high winds, closed roads and trails from tree fall, a limited number of very low tides, rough seas, turbidity, and adverse rain and weather conditions limit recreational and tribal harvesting opportunities throughout the North Coast Study Region. While certain of these constraints are California-wide, others are limited to the North Coast Study Region or a portion of that region. Cumulative constraints within the North Coast Study Region to the region and requires a correspondingly unique approach.

The California Department of Public Health issues an annual paralytic shellfish quarantine that restricts the harvest of shellfish, certain fish, mussels, and other intertidal species a minimum of six months a year. The ban is usually issued from May 1 through October 31, limiting harvesting to the stormiest months of the year. Further extensions of this ban are common, resulting in restricted harvesting over 50% of each year. This provides a significant, ongoing protective constraint on harvesting of intertidal mussels and other species in the North Coast Study Region and throughout California.

Minus tides, necessary for harvesting mussels and other intertidal species, are an additional natural constraint on recreational and tribal harvest of marine species. The limited number of minus tides greatly limits the number of days of possible harvest by recreational harvesters and Native peoples. For example, the total number of such tides in Crescent City, Del Norte County, did not exceed 55 for either 2009 or 2010. Approximately half of these minus tide days fell within the paralytic shellfish quarantine, leaving in 2009 and 2010 only 23 and 21 days, respectively, with acceptable tides for harvest of intertidal species.

Adverse weather conditions in the North Coast Study Region limit harvesting opportunities as well. The region experience frequent high wind events. In 2010, there were 105 days where sustained winds exceeded 23 mph—the threshold for issuance of a small craft advisory—and 85 days in 2009. The frequency and intensity of rain events similarly outstrip those of the other regions. Unsurprisingly, greater adverse weather also results in rough seas to an extent not seen in the South, Central, or North Central Coast Study Regions. In 2010, 139 days of waves greater than 9 feet were recorded offshore of Crescent City, while 91 days were recorded for 2009. Intertidal harvesting is exceedingly dangerous and difficult under such wave conditions.

Adverse weather and rough seas, combined with few days of minus one tides for possible intertidal species harvest, results in severely limited opportunities for recreational and tribal harvest within the North Coast Study Region. For 2010, the number of days with a greater than minus one tide but with wave heights less than nine feet totaled just nine days. In 2009, there were just 15 days with tide and wave conditions acceptable for harvesting of intertidal species. Acceptable harvest days would be further reduced by high winds, insufficient sun or moon light, or large rain events.

Within the North Coast Study Region, water turbidity limiting visibility is particularly acute along the Humboldt and Del Norte Counties coast. The Eel, Mad, and Klamath rivers carry heavy sediment loads, among the highest in North America. Coastal current patterns shift from north to south, forcing sediment to hug the coast, resulting in the poorest visibility for the entire California Coast in Humboldt and Del Norte Counties. This lack of visibility, combined with the rough seas mentioned above, greatly restrict skin and scuba diving take opportunities.

Demographic and Structural Constraints

Demographics of the North Coast Study Region vary significantly from that of the other study regions. The North Coast Study Region encompasses the least populated area in all of California. Based on 2010 U.S. census data, the number of people per square mile in Del Norte County is 28.4, while the total population density of the North Coast Study Region counties is 31.07 persons per square mile, which is exceeding less than 2419.6 persons per square mile in Los Angeles County in the South Coast Study Region or 307.1 in Sonoma County in the North Central Coast Study Region. This necessarily reduces the amount of potential recreational or tribal harvesting relative to the other MLPA study regions.

These demographic differences play out in the harvest of marine resources as evidenced by the number of licenses by county. Department of Fish and Game statistics indicate that the total number of annual fishing licenses issued in 2005 for all of Del Norte, Humboldt, and Mendocino counties combined was 29,072. This amounts to less than 1.5% of the total sportfishing licenses issued that year. The number of potential recreational harvesters and gatherers in the North Coast Study Region is vastly outstripped by those in the other study regions.

Infrastructure and Access Constraints

Further in contrast to the other study regions, access to much of the coastline within the North Coast Study Region, particularly within Del Norte and Humboldt Counties, is severely limited. Accessing the rugged coastline can often require traversing through the thick redwood forest either by road or trail, scaling steep embankments, climbing jagged rocks, or navigating mounds of unstable driftwood. During the winter months, it is a common for coastal or river flooding, landslides, and trees and other debris to close major roadways, such as U.S. Highway 101, severely limiting vehicular access in or out of coastal communities like Crescent City and Klamath.

U.S. Highway 101 provides the primary means for vehicular access in Del Norte and Humboldt Counties. From the Oregon border to Patrick's Point, however, there are only roughly 10 miles of coastal access for this entire 75 miles of highway. Access along the remaining 65 miles is severely limited by the lack of

a highway comparable to U.S. Highway 1 in the South and Central Coast Study Regions, extensive coastal land held by Redwood National and State Parks, high coastal bluffs, and long and steep hiking trails.

Within the 83 miles of Yurok Ancestral Territory that border the Pacific Ocean, Redwood National and State Parks (RNSP) manage thirty-seven 37 miles of coastline. Distinguishing themselves from other parks in California, RNSP prioritizes resource protection and preservation over development of easy accessibility, focusing primarily on hiking through nature, preventing extractive use or vehicular access. Additionally many park areas and beaches are restricted to day use only.

Newton B. Drury Scenic Parkway, a primary access road within RNSP for coastal trails and gathering areas, is closed routinely for partial days to weeks at a time because of safety concerns due to fallen trees, forest debris, and frozen roads sheltered by the redwood canopy. The difficulty of keeping roads open along the North Coast is so great that the Redwood National Parks Service is decommissioning coastal roads and converting them to hiking trails.

The temperate coastal climate of the North Coast makes for wet conditions year-round, which impact accessibility to beach areas from trails of dirt or wet, slippery rock. With limited road access, trails are often the only way to get to the beach. Many areas of rocky intertidal shoreline are simply not practically accessible by any means.

In addition, risk physical injury from “widow makers.” Widow maker is a term used to describe loose debris such as limbs and tree tops suspended from the forest canopy which can fall at any time, but most often during high winds or other adverse weather, and may strike humans on the ground. Redwood National and State Parks Service and the Occupational Safety and Health Administration (OSHA) advise individuals to avoid redwood forests in times of high winds, heavy rainfall and coastal flooding.

Access to Traditional Gathering Fundamental to Health, Safety, and General Welfare of Native Americans

Native Americans are at greater risk for diabetes than any other population in the United States. According to the American Diabetes Association, American Indians and Alaskan Natives are 2.2 times more likely to have Type II Diabetes than non-Hispanic whites. Diabetes diagnosis brings costly complications which include blindness, amputations of lower extremities, kidney failure, cardiovascular disease, decreased quality of life and premature death.

Current dietary choices of Native American people are the result of systematic loss of culture, historical trauma stemming from systematic genocide, forced removal, and assimilation policies of the United States government which forced Native Americans to become dependent upon government rations and food programs. Adverse health effects directly correlate with Western expansion and the separation of Native people from their ancestral lands and the freedom harvest natural foods from their homelands. Other factors that exacerbate the extreme rate of diabetes in Native communities are the high rate of

poverty, low education level, lack of resources, facilities and equipment and lack of access to nutritious foods.

Direct access to traditional food sources is essential to the health, safety and survival of Native American communities. Utilizing traditional knowledge and lifestyles can influence positive change in Native American communities. Regular engagement in traditional gathering provides necessary physical activity and access to nourishing foods like seaweed, mussels, barnacles, and surf fish.

A prohibition or restriction in traditional tribal uses of marine resources will further contribute to the declining health of Native American populations by denying access to a reliable healthy traditional food source.

Relationship Between California, Tribal Governments, and Ceremonial, Cultural and Religious Subsistence Gathering by Tribal People

Indian tribes and traditional practices play a major role in California, which has more federally recognized tribes than any other state with the exception of Alaska. The North Coast Study Region encompasses the ancestral territory of numerous tribes, most of which are natural resources-based tribes with significant numbers of tribal members engaged in traditional harvesting. The region includes the largest tribes in California with strong, culturally intact traditional harvesting practices. Important cultural resources and traditional tribal practices are documented in the various tribal factual records submitted to the Fish and Game Commission hereby incorporated. These traditional tribal uses of these marine resources constitute a significant cultural and historic resource for both tribes and the state, which the state is obligated to protect.

Each of the federally recognized tribes in the North Coast Study Region is uniquely situated. The governmental structure and traditional use of marine resources of various tribes has been documented in the factual records submitted and approved by the Fish and Game Commission in September 2011 and hereby incorporated.

The Yurok Tribe, a federally recognized tribe and the largest tribe in California with over 5,700 members, is one example of the type of tribe and tribal people within the North Coast Study Region. Yurok people have engaged in subsistence harvesting and gathering uninterrupted since time immemorial. The Yurok Reservation is in a remote location, with limited road access. Unemployment is over three times greater on the Yurok Reservation compared to the national average. Nearly one third of individuals living on the Yurok Reservation fall below the poverty level. Yurok tribal members supplement their income through subsistence gathering of marine aquatic plants and shellfish, which are an important food source. Continued access to a food source for Yurok people is a health and safety issue, directly related to the general welfare of California residents, and a compelling interest for California.

Yurok subsistence harvesting incorporates ceremonial, cultural, and religious practices at specific sites, rendering it non-transferable to another site. The Yurok have maintained an uninterrupted presence at these sites for subsistence harvesting and gathering since time immemorial. For example, the Yurok

have documented traditional sea canoe routes to Redding Rock, which was and still is used for cultural, ceremonial, and subsistence gathering purposes. Traditional take and other customary uses by Yurok people is an intrinsic component of the marine ecosystem. There is a lack of credible scientific evidence or proof that ceremonial, cultural, or religious subsistence gathering or harvesting by Yurok tribal members has damaged marine resources.

The Yurok Tribe has extensive scientific, police, and court enforcement capacity. This translates into an ability to enforce tribal laws, including those regulating marine resources, with Yurok tribal members. Yurok Tribal Public Safety Officers are P.O.S.T. certified and cross-deputized by both Humboldt and Del Norte Counties. This also provides an opportunity to supplement state MLPA monitoring and enforcement efforts with tribal efforts. Department of Fish and Game enforcement officers currently work with Yurok law enforcement to patrol the Klamath River fishery, which indicates a similar opportunity for improved patrolling of marine resources.

The Yurok Tribe's Fisheries Department has demonstrated its scientific capacity through its leadership role in research and restoration efforts throughout the Klamath River basin. The department employs over 70 staff and is largely acknowledge as comprising the most knowledgeable and experienced team of fish biologists on the North Coast. In addition, the Yurok Tribe Environmental Program has assumed EPA regulatory and monitoring responsibility for the Yurok Reservation. The Yurok Tribe is currently conducting independent research on eulachon and mussel toxicity within the marine environment, with additional planned marine resources baseline and monitoring research.

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ACCESS

EXHIBIT A

National Park Service
U.S. Department of the Interior

Redwood National and State Parks

Current Conditions

EXHIBIT

A - 01

Updated Thursday, December 15, 2011
12:35 p.m.

Contact an **information center** or call 707-465-7335 for the most up-to-date information.

Roads & Highways

For directions to Redwood National and State Parks, click here. Also be sure to check-out our recommended scenic drives.

- **Davison Road** is ***OPEN***
- Holter Ridge Road is ***CLOSED*** until further notice.
- **Howland Hill Road** is ***OPEN***
- **Newton B. Drury Scenic Parkway** is ***OPEN***
- **Coastal Drive *CLOSED*** north of the **Newton B. Drury Scenic Parkway** at Carruthers Cove trailhead to Alder Camp Road due to severe slump in road surface. View News Release **here**.
- For the latest highway conditions in California, visit the **California Department of Transportation (Caltrans)**.
- For the latest highway conditions in Oregon, visit the **Oregon Department of Transportation's TripCheck**.

Trails
For general hiking and trail information, click here.

- Seasonal footbridge over Smith River, from Stout Grove to **Jedediah Smith Campground** is out for the season.
- **Fern Canyon Trail** seasonal footbridges are out for the season.
- Upper and lower seasonal footbridges on **Redwood Creek Trail** are out for the season.
- **Simpson Reed Grove** trailhead and loop trail system are closed until completion of construction.

EXHIBIT

Campgrounds and Backcountry Camps
For general camping and campground information, click here.

A - 01

- **Ossagon backcountry camp** is now ***OPEN***. Pit toilets are no longer available-please use **Leave No Trace** principles.
- **Miners Ridge** backcountry camp is ***CLOSED.***
- **Jedediah Smith** and **Elk Prairie** campgrounds are ***OPEN***.
- **Gold Bluffs Beach Campground *CLOSED*** for the season on September 19, 2011.
- **Mill Creek Campground *CLOSED*** for the season on September 6, 2011.
- Effective Tuesday, September 7, 2010, all park campgrounds went off the reservation system (**ReserveAmerica**) and now operate on a first come, first served basis. Reservation can be made and are recommended for the high season May 27th - Sept. 4th.

Visitor Centers, Information Centers, & Other Facilities
For general information about visitor centers, including locations, operating hours, and contact information, click **here.**

- All visitor centers will be closed on Christmas Day and New Years Day. Additionally, **Prairie Creek Visitor Center** will be closed on Friday, December 16, 2011 and Tuesday, December 20, 2011.
- **Jedediah Smith Visitor Center.** is ***CLOSED*** for the season.
- **Hiouchi Information Center *CLOSED*** for the season on Sunday, November 13, 2011, and will reopen in May 2012.
- The Mill Creek Watershed is open to the public on *weekends only.*

Weather
For general climate and weather information, click **here.**

- For NOAA/National Weather Service forecasts and current weather conditions at Crescent City, Calif., click **here.**
- For NOAA/National Weather Service forecasts and current weather conditions at Orick, Calif., click **here.**

Did You Know?
Common in the redwood forest, ravens often scavenge food scraps found in campgrounds. Once they find an easy food source, they constantly fly over that area in search of food. Unfortunately, they may come across a marbled murrelet nest and eat the egg or chick! Please store all food items properly.

Last Updated: December 15, 2011 at 13:37 MST

EXHIBIT

A - 01

Twitter
Search

Have an account? **Sign in** *New to Twitter?* **Join Today »**

Username or email Password

Remember me Sign in

Forgot password?
Already using Twitter via SMS?

Redwood N&SP

@RedwoodNPS California
Official NPS tweets for Redwood National and State Parks—133,000 acres of awesomeness, including the world's tallest trees and 40 stunning miles of coastline.
http://www.nps.gov/redw

Text **follow RedwoodNPS** to **40404** in the United States
Follow

- Tweets
- Favorites
- Following
- Followers

- Lists

»

RedwoodNPS Redwood N&SP
Stout Grove & part of Howland Hill Rd will close 4-6 hrs beginning 7:30 am on Feb 2 for trailhead improvements: go.nps.gov/8urclu
1 Feb

»

RedwoodNPS Redwood N&SP
You'd make a great park ranger! Application deadline for seasonal Park Ranger (Interpretation) at Redwood is 2/8/2012: ow.ly/8Gsly
25 Jan

»

EXHIBIT
A - 02

RedwoodNPS Redwood N&SP
Newton B. Drury Scenic Parkway has reopened. For more Current Conditions: go.nps.gov/jalj86
25 Jan
»

RedwoodNPS Redwood N&SP
"If We Build It, They Will Stay:" @thetriplicate on plans for inter-agency visitor center at Crescent City Harbor: ow.ly/8EQ1D
24 Jan
»

RedwoodNPS Redwood N&SP
Newton B. Drury Scenic Pkwy closed due to flood/mud—use U.S. 101; Davison Rd open but expect mud and at least 1 ft water at creek crossings.
23 Jan
»

RedwoodNPS Redwood N&SP
Video from around the Smith River this morning (10 ft below yesterday's 28 ft flow stage, but impressive still!): ow.ly/8APbM
20 Jan
»

RedwoodNPS Redwood N&SP
Due to power outages, the Kuchel and Prairie Creek VCs will be closed today. Crescent City Info. Ctr. is open. For park info.: 707-465-7335
19 Jan
»

RedwoodNPS Redwood N&SP
Rain, rain, rain... Check-out NOAA's flow stage data for the Smith River: ow.ly/8zoMb
19 Jan
»

RedwoodNPS Redwood N&SP
NOAA's Hazardous Weather Outlook: ow.ly/8xVQu
18 Jan
»

EXHIBIT

A - 02

RedwoodNPS Redwood N&SP
A reluctant reminder to stay away from the redwoods today (wind gusts to 50mph, coastal flooding, and rain—lots of rain):...
18 Jan
»

RedwoodNPS Redwood N&SP
Doh! Those fees will be waived Jan 14-16 (NOT Feb) in honor of Dr. King! Sorry!
10 Jan
»

RedwoodNPS Redwood N&SP
Celebrate Dr. Martin Luther King Jr.'s legacy: day use fees waived Feb 14-16 @ Redwood National & State Parks and ~400 other national parks!
10 Jan
»

RedwoodNPS Redwood N&SP
High surf advisory on Redwood Coast, 9am Thur - 3pm Fri. Expect 25' waves with locally higher breakers. Stay far back from the surf today.
5 Jan
»

RedwoodNPS Redwood N&SP
Newton Drury Pkwy will remain closed 'til at least Sat morning due to icy conditions. Frozen roads resist melting under the redwood canopy.
22 Dec
»

RedwoodNPS Redwood N&SP
Extreme high tides-"King Tides"-expected Fri (9:29am) & Sat (10:19am) on the north coast. Dramatic to see, but stay well back & stay safe!
22 Dec
»

RedwoodNPS Redwood N&SP

EXHIBIT

A - 02

Newton Drury Pkwy closed today due to heavy icing last night. Freezing temps tonight means the road likely won't open til mid-day Thursday.
21 Dec
»

RedwoodNPS Redwood N&SP
Check out the new plaque at Lady Bird Johnson Grove marking the site of the Aug '69 dedication of Redwood NP. pic.twitter.com/N9CKQtQM
21 Dec
»

RedwoodNPS Redwood N&SP
Coast redwoods grow only in northern CA and southernmost OR. What? And New Zealand, too? Huh. Who knew? goo.gl/HxCuh
16 Dec
»

RedwoodNPS Redwood N&SP
Seeking Volunteer Camp Host and Visitor Center Volunteer at Prairie Creek Redwoods State Park: 1.usa.gov/ukTKoT (scroll down)
14 Dec
»

RedwoodNPS Redwood N&SP
Ranger Carey (aka "Banana Slug Queen") discusses her favorite animal in the parks: youtu.be/eVr1rqaFXLI
12 Dec
»

RedwoodNPS Redwood N&SP
Aloha to a coworker, friend, & true outdoorsman. Redwood will miss you, Ranger Rob! Hope our USFWS bros & sisters treat you well!
9 Dec
»

RedwoodNPS Redwood N&SP
Learn about restoration efforts in the parks and plant a redwood at "Explore & Restore the Mill Creek Watershed:" goo.gl/oSx3l (PDF)
6 Dec

EXHIBIT
A - 02

»

RedwoodNPS Redwood N&SP
Park Ranger Susanna shares her thoughts & experiences working with children in the redwoods.
youtu.be/I1Tm2lCl8vs
2 Dec

»

RedwoodNPS Redwood N&SP
Newton B Drury Scenic Parkway is OPEN!!!
2 Dec

»

RedwoodNPS Redwood N&SP
Howland Hill Road is now OPEN
25 Nov

»

RedwoodNPS Redwood N&SP
Howland Hill Road is temporarily closed
25 Nov

»

RedwoodNPS Redwood N&SP
Happy Thanksgiving from us all at Redwood! We're grateful for parks, the opportunity to serve, and y'all who make it all possible. Thanks!
23 Nov

»

RedwoodNPS Redwood N&SP
Bummer: NBD Pkwy likely remain closed over holiday due to weather. But here's a cute bobcat pic near our office!: twitpic.com/7hkjze
21 Nov

»

EXHIBIT

A - 02

RedwoodNPS Redwood N&SP
#NOAA Surf Advisory today for local beaches : dangerous rip currents and an increased threat for sneaker

waves: goo.gl/fFC5L
18 Nov
»

RedwoodNPS Redwood N&SP
Watch out for high seas and sneaker waves today in RNSP
18 Nov
»

RedwoodNPS Redwood N&SP
Davison Road is OPEN
15 Nov
»

RedwoodNPS Redwood N&SP
More Redwood **#elk** drama from **@sfgate**: goo.gl/XLBdm
8 Nov
»

RedwoodNPS Redwood N&SP
Trees removed, state park crews repairing Newton B. Drury Scenic Pkwy this week. Tentative estimate for road reopening on 11/14.
7 Nov
»

RedwoodNPS Redwood N&SP
Davison Road will be Closed for construction 7 days a week until November 10th or later
4 Nov
»

RedwoodNPS Redwood N&SP
Give elk space & proceed w caution: 3 diff groups of hikers charged by elk in vicinity of James Irvine/Fern Cyn/Friendship Ridge trails.
3 Nov
»

RedwoodNPS Redwood N&SP

EXHIBIT
A - 02

Happy Halloween! Here's an image of both a bat AND a skeleton that we found on the beach. Redwood rules! twitpic.com/7915y8
31 Oct
»

RedwoodNPS Redwood N&SP
Hiouchi Information Center will close for the season on Nov 13; will re-open in May 2012. Good-night, sweet visitor center...
31 Oct
»

RedwoodNPS Redwood N&SP
Beginning Nov 6, all park visitor centers on "winter hours:" 9 a.m. –4 p.m., 7 days/week. Current Conditions: go.nps.gov/1ulcta
31 Oct
»

RedwoodNPS Redwood N&SP
Starting October 31st Davison Road will be CLOSED Mon-Thurs from 7a.m. to 4:30p.m. for construction.
28 Oct
»

RedwoodNPS Redwood N&SP
Crescent City will be removing trees along 2nd St outside the Crescent City Information Center today. Visitors must use south entrance.
26 Oct

Stay in touch with Redwood N&SP

Join Twitter right now:

Full name

Email

Password

Sign up

EXHIBIT

A - 02

Curious how Redwood N&SP uses Twitter?

Google

Directions to US-101 S
75.9 mi – about **1 hour 25 mins**

EXHIBIT

A - 03

A US-101 S/Oregon Coast Hwy

101 1. Head **south** on **US-101 S/Oregon Coast Hwy** toward **Elias Way** go 75.9 mi
Continue to follow US-101 S total 75.9 mi
About 1 hour 25 mins

B US-101 S

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

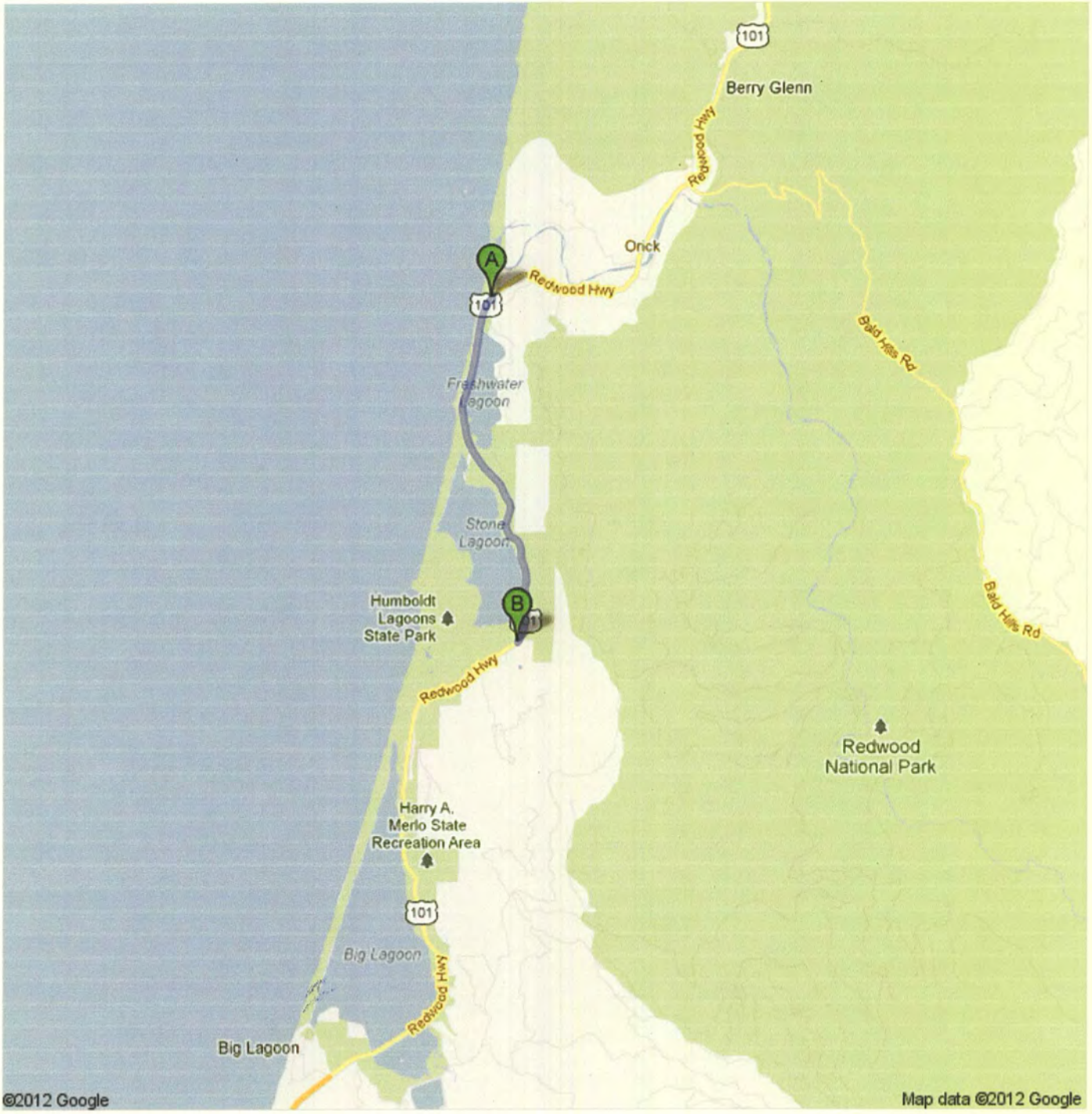
Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

EXHIBIT

A - 03

Google

Directions to US-101 S/Redwood Hwy
4.2 mi – about **5 mins**



EXHIBIT

A - 04

A US-101 S/Redwood Hwy

101 1. Head **southwest** on **US-101 S/Redwood Hwy** toward **Old State Hwy** About 5 mins	go 4.2 mi total 4.2 mi

B US-101 S/Redwood Hwy

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

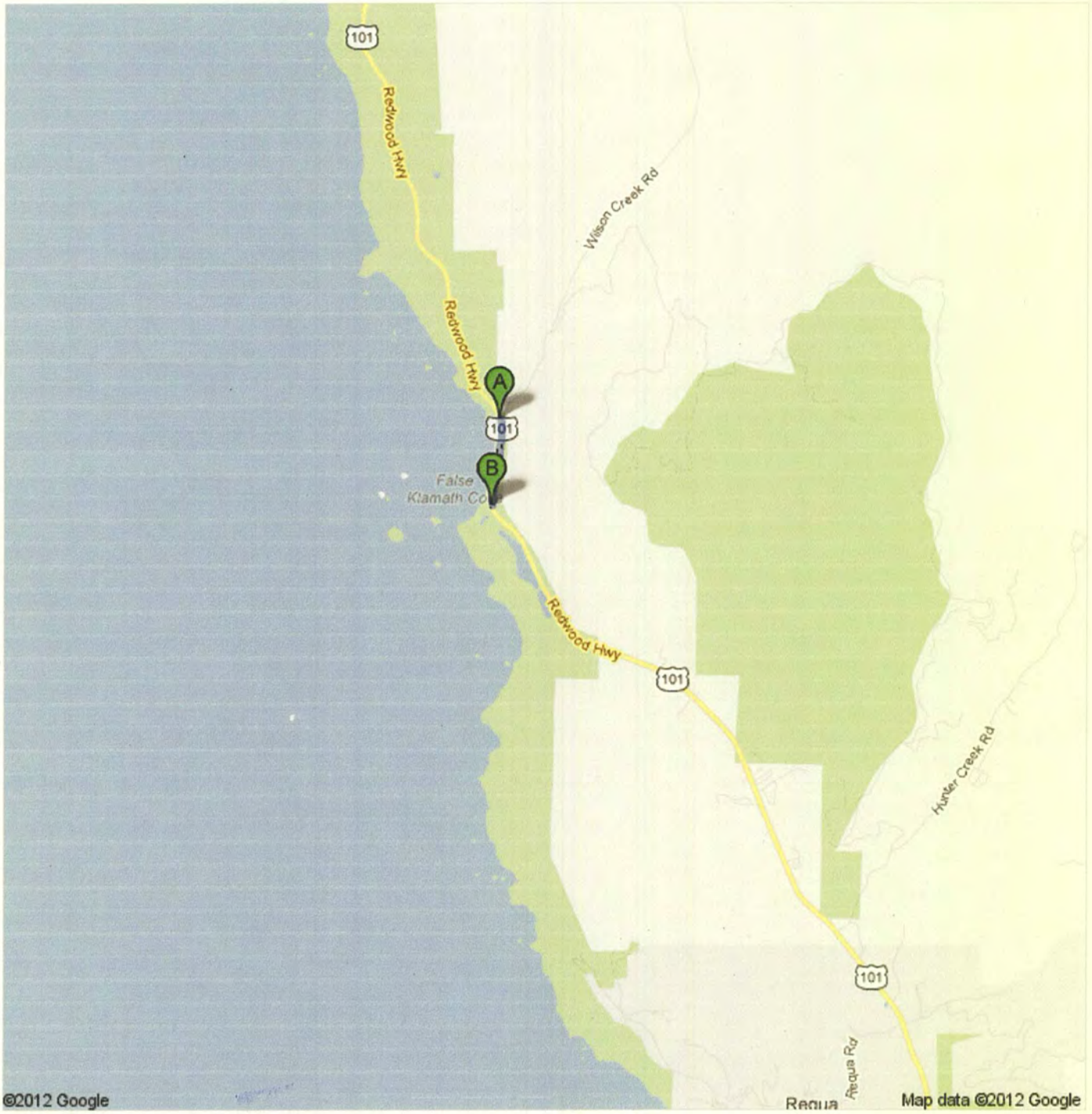
Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

EXHIBIT

A - 04

Google

Directions to US-101 S/Redwood Hwy
0.5 mi



EXHIBIT

A - 05

A US-101 S/Redwood Hwy

101 1. Head **south** on **US-101 S/Redwood Hwy** toward **Wilson Creek Rd** — go 0.5 mi, total 0.5 mi

B US-101 S/Redwood Hwy

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

EXHIBIT

A - 05

Google

Directions to US-101 S
0.5 mi

EXHIBIT

A - 06

A US-101 S

101 1. Head **southeast** on **US-101 S** — go 0.5 mi
total 0.5 mi

B US-101 S

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

EXHIBIT

A - 06

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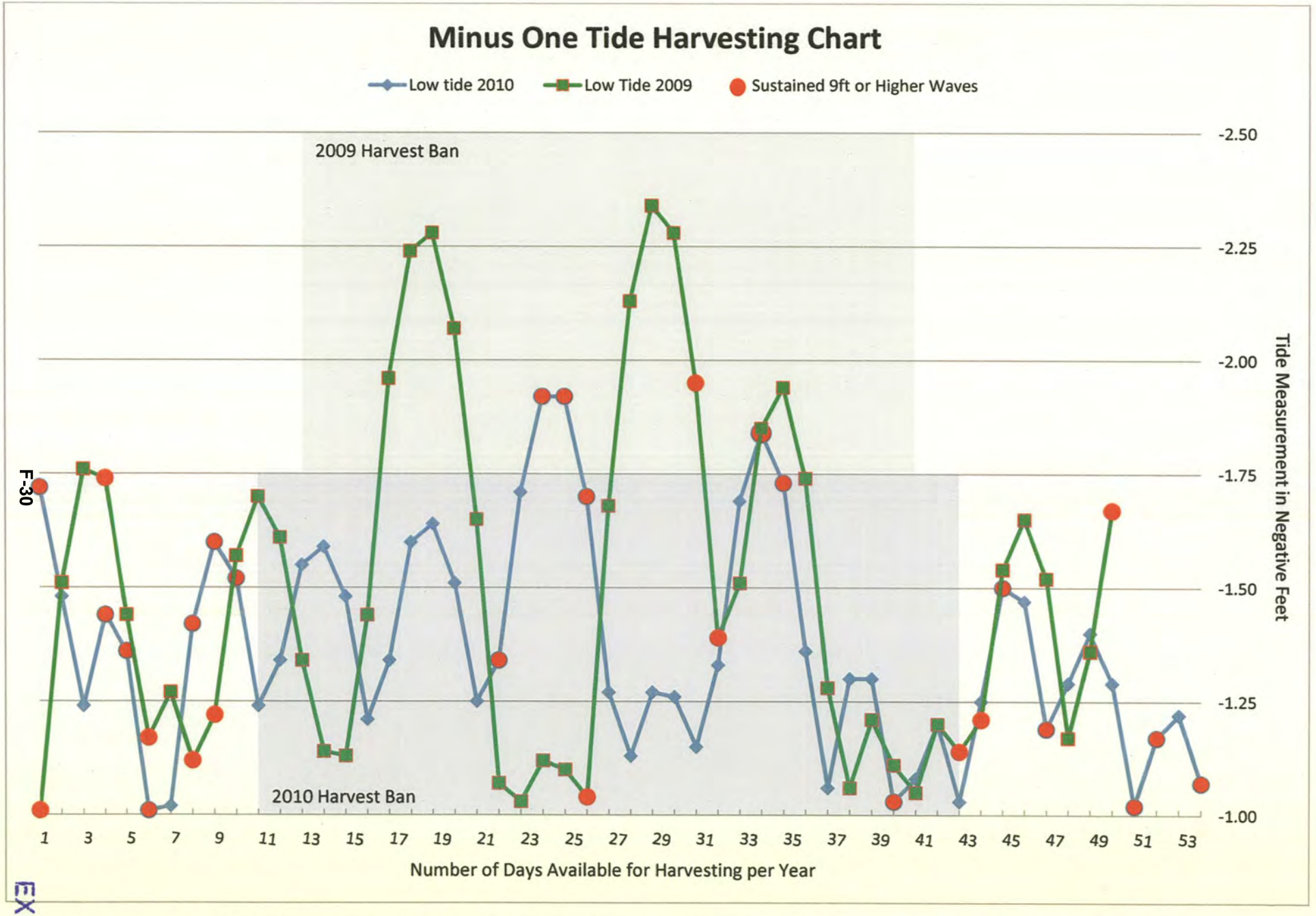
ADVERSE CONDITIONS

EXHIBIT AC

Minus One Tide Harvesting Chart



EXHIBIT

Tide data courtesy of: WWW Tide/Current Predictor: Biological Sciences, University of South Carolina, http://tbone.biol.sc.edu/tide, Columbia SC 29208 USA
Wave data courtesy of: National Buoy Data Center, National Oceanic and Atmospheric Administration, http://www.ndbc.noaa.gov/histsearch.php?station=46027,

The chart represents a two year time span for minus one tides, the primary time for recreational harvest of shellfish and mussels. Sustained high waves create a special danger to the harvest of intertidal species. Minus tide days during which waves exceeded nine feet in height are marked on the chart in red.

From January 1 through December 31, 2010, there were a total of 54 days of greater than minus one tides, represented on the chart by the blue line. These amount to 15% harvest availability throughout the entire year. Due to the harvest ban (seen in light blue for 2010), six months of the year are excluded from harvesting. Taking this into account, the recreational harvesters would be limited to 21 days of harvest for 2010, or 5.8% of the year. During 2010, there were 105 days with sustained waves of nine feet or higher. Overlapped with minus tide days outside of the paralytic shellfish quarantine, high waves further limit recreational harvesting to nine days or 2.5% of the year.

For the entire year of 2009, represented in this chart by the green line, there were 50 minus one tide days for the harvest of mussels and shellfish. However, the six month ban (seen in light green for 2009) eliminated 27 of those days, leaving 23 days for harvest, or 6.3%. Another 8 days restricted because of wave heights over nine feet, leaving a mere 15 days for harvesting or 4.1% of the year.

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COUNTY DEMOGRAPHICS

EXHIBIT CD

State & County QuickFacts

Del Norte County, California

People QuickFacts	Del Norte County	California
Population, 2011 estimate	NA	37,691,912
Population, 2010	28,610	37,253,956
Population, percent change, 2000 to 2010	4.0%	10.0%
Population, 2000	27,507	33,871,648
Persons under 5 years, percent, 2010	6.0%	6.8%
Persons under 18 years, percent, 2010	21.5%	25.0%
Persons 65 years and over, percent, 2010	13.5%	11.4%
Female persons, percent, 2010	44.4%	50.3%
White persons, percent, 2010 (a)	73.7%	57.6%
Black persons, percent, 2010 (a)	3.5%	6.2%
American Indian and Alaska Native persons, percent, 2010 (a)	7.8%	1.0%
Asian persons, percent, 2010 (a)	3.4%	13.0%
Native Hawaiian and Other Pacific Islander, percent, 2010 (a)	0.1%	0.4%
Persons reporting two or more races, percent, 2010	4.5%	4.9%
Persons of Hispanic or Latino origin, percent, 2010 (b)	17.8%	37.6%
White persons not Hispanic, percent, 2010	64.7%	40.1%
Living in same house 1 year & over, 2006-2010	80.1%	84.0%
Foreign born persons, percent, 2006-2010	7.3%	27.2%
Language other than English spoken at home, pct age 5+, 2006-2010	16.7%	43.0%
High school graduates, percent of persons age 25+, 2006-2010	81.3%	80.7%
Bachelor's degree or higher, pct of persons age 25+, 2006-2010	14.3%	30.1%
Veterans, 2006-2010	3,154	2,051,959
Mean travel time to work (minutes), workers age 16+, 2006-2010	14.9	26.9
Housing units, 2010	11,186	13,680,081
Homeownership rate, 2006-2010	60.9%	57.4%
Housing units in multi-unit structures, percent, 2006-2010	14.6%	30.7%
Median value of owner-occupied housing units, 2006-2010	$240,900	$458,500
Households, 2006-2010	9,906	12,392,852
Persons per household, 2006-2010	2.56	2.89
Per capita money income in past 12 months (2010 dollars) 2006-2010	$18,974	$29,188
Median household income 2006-2010	$36,118	$60,883
Persons below poverty level, percent, 2006-2010	22.0%	13.7%

Business QuickFacts	Del Norte County	California
Private nonfarm establishments, 2009	464	857,831[2]
Private nonfarm employment, 2009	4,401	12,833,709[2]
Private nonfarm employment, percent change 2000-2009	0.1%	-0.4%[2]

EXHIBIT

C D - 0 1

Nonemployer establishments, 2009	1,269	2,674,301
Total number of firms, 2007	1,604	3,425,510
Black-owned firms, percent, 2007	F	4.0%
American Indian- and Alaska Native-owned firms, percent, 2007	S	1.3%
Asian-owned firms, percent, 2007	S	14.9%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	F	0.3%
Hispanic-owned firms, percent, 2007	S	16.5%
Women-owned firms, percent, 2007	28.0%	30.3%
Manufacturers shipments, 2007 ($1000)	0[1]	491,372,092
Merchant wholesaler sales, 2007 ($1000)	D	598,456,486
Retail sales, 2007 ($1000)	206,291	455,032,270
Retail sales per capita, 2007	$7,176	$12,561
Accommodation and food services sales, 2007 ($1000)	32,195	80,852,787
Building permits, 2010	29	43,716
Federal spending, 2009	230,544	331,030,869[2]

Geography QuickFacts	**Del Norte County**	**California**
Land area in square miles, 2010	1,006.37	155,779.22
Persons per square mile, 2010	28.4	239.1
FIPS Code	015	06
Metropolitan or Micropolitan Statistical Area	Crescent City, CA Micro Area	

1: Counties with 500 employees or less are excluded.
2: Includes data not distributed by county.

Population estimates for counties will be available in April, 2012 and for cities in June, 2012.

(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information
F: Fewer than 100 firms
FN: Footnote on this item for this area in place of data
NA: Not available
S: Suppressed; does not meet publication standards
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Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report
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EXHIBIT

C D - 0 1

State & County QuickFacts

Mendocino County, California

People QuickFacts	Mendocino County	California
Population, 2011 estimate	NA	37,691,912
Population, 2010	87,841	37,253,956
Population, percent change, 2000 to 2010	1.8%	10.0%
Population, 2000	86,265	33,871,648
Persons under 5 years, percent, 2010	6.1%	6.8%
Persons under 18 years, percent, 2010	22.2%	25.0%
Persons 65 years and over, percent, 2010	15.4%	11.4%
Female persons, percent, 2010	49.9%	50.3%
White persons, percent, 2010 (a)	76.5%	57.6%
Black persons, percent, 2010 (a)	0.7%	6.2%
American Indian and Alaska Native persons, percent, 2010 (a)	4.9%	1.0%
Asian persons, percent, 2010 (a)	1.7%	13.0%
Native Hawaiian and Other Pacific Islander, percent, 2010 (a)	0.1%	0.4%
Persons reporting two or more races, percent, 2010	4.5%	4.9%
Persons of Hispanic or Latino origin, percent, 2010 (b)	22.2%	37.6%
White persons not Hispanic, percent, 2010	68.6%	40.1%
Living in same house 1 year & over, 2006-2010	88.0%	84.0%
Foreign born persons, percent, 2006-2010	11.6%	27.2%
Language other than English spoken at home, pct age 5+, 2006-2010	20.0%	43.0%
High school graduates, percent of persons age 25+, 2006-2010	83.2%	80.7%
Bachelor's degree or higher, pct of persons age 25+, 2006-2010	22.7%	30.1%
Veterans, 2006-2010	6,924	2,051,959
Mean travel time to work (minutes), workers age 16+, 2006-2010	19.2	26.9
Housing units, 2010	40,323	13,680,081
Homeownership rate, 2006-2010	62.8%	57.4%
Housing units in multi-unit structures, percent, 2006-2010	13.1%	30.7%
Median value of owner-occupied housing units, 2006-2010	$410,600	$458,500
Households, 2006-2010	34,374	12,392,852
Persons per household, 2006-2010	2.49	2.89
Per capita money income in past 12 months (2010 dollars) 2006-2010	$23,357	$29,188
Median household income 2006-2010	$43,759	$60,883
Persons below poverty level, percent, 2006-2010	17.1%	13.7%

Business QuickFacts	Mendocino County	California
Private nonfarm establishments, 2009	2,593	857,831[1]
Private nonfarm employment, 2009	22,130	12,833,709[1]
Private nonfarm employment, percent change 2000-2009	-10.7%	-0.4%[1]

EXHIBIT

C D - 0 2

Nonemployer establishments, 2009	8,080	2,674,301
Total number of firms, 2007	11,015	3,425,510
Black-owned firms, percent, 2007	0.3%	4.0%
American Indian- and Alaska Native-owned firms, percent, 2007	1.9%	1.3%
Asian-owned firms, percent, 2007	S	14.9%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	F	0.3%
Hispanic-owned firms, percent, 2007	S	16.5%
Women-owned firms, percent, 2007	27.6%	30.3%
Manufacturers shipments, 2007 ($1000)	773,447	491,372,092
Merchant wholesaler sales, 2007 ($1000)	D	598,456,486
Retail sales, 2007 ($1000)	1,259,064	455,032,270
Retail sales per capita, 2007	$14,716	$12,561
Accommodation and food services sales, 2007 ($1000)	194,204	80,852,787
Building permits, 2010	157	43,716
Federal spending, 2009	822,873	331,030,869[1]

Geography QuickFacts	**Mendocino County**	**California**
Land area in square miles, 2010	3,506.34	155,779.22
Persons per square mile, 2010	25.1	239.1
FIPS Code	045	06
Metropolitan or Micropolitan Statistical Area	Ukiah, CA Micro Area	

1: Includes data not distributed by county.

Population estimates for counties will be available in April, 2012 and for cities in June, 2012.

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EXHIBIT

C D - 0 2

State & County QuickFacts

Humboldt County, California

People QuickFacts	Humboldt County	California
Population, 2011 estimate	NA	37,691,912
Population, 2010	134,623	37,253,956
Population, percent change, 2000 to 2010	6.4%	10.0%
Population, 2000	126,518	33,871,648
Persons under 5 years, percent, 2010	5.7%	6.8%
Persons under 18 years, percent, 2010	20.1%	25.0%
Persons 65 years and over, percent, 2010	13.2%	11.4%
Female persons, percent, 2010	49.8%	50.3%
White persons, percent, 2010 (a)	81.7%	57.6%
Black persons, percent, 2010 (a)	1.1%	6.2%
American Indian and Alaska Native persons, percent, 2010 (a)	5.7%	1.0%
Asian persons, percent, 2010 (a)	2.2%	13.0%
Native Hawaiian and Other Pacific Islander, percent, 2010 (a)	0.3%	0.4%
Persons reporting two or more races, percent, 2010	5.3%	4.9%
Persons of Hispanic or Latino origin, percent, 2010 (b)	9.8%	37.6%
White persons not Hispanic, percent, 2010	77.2%	40.1%
Living in same house 1 year & over, 2006-2010	82.8%	84.0%
Foreign born persons, percent, 2006-2010	5.4%	27.2%
Language other than English spoken at home, pct age 5+, 2006-2010	9.2%	43.0%
High school graduates, percent of persons age 25+, 2006-2010	90.4%	80.7%
Bachelor's degree or higher, pct of persons age 25+, 2006-2010	26.3%	30.1%
Veterans, 2006-2010	10,988	2,051,959
Mean travel time to work (minutes), workers age 16+, 2006-2010	17.9	26.9
Housing units, 2010	61,559	13,680,081
Homeownership rate, 2006-2010	57.6%	57.4%
Housing units in multi-unit structures, percent, 2006-2010	18.9%	30.7%
Median value of owner-occupied housing units, 2006-2010	$324,700	$458,500
Households, 2006-2010	54,276	12,392,852
Persons per household, 2006-2010	2.38	2.89
Per capita money income in past 12 months (2010 dollars) 2006-2010	$24,025	$29,188
Median household income 2006-2010	$40,089	$60,883
Persons below poverty level, percent, 2006-2010	17.7%	13.7%

Business QuickFacts	Humboldt County	California
Private nonfarm establishments, 2009	3,406	857,831[1]
Private nonfarm employment, 2009	33,603	12,833,709[1]
Private nonfarm employment, percent change 2000-2009	-10.1%	-0.4%[1]

EXHIBIT

C D - 0 3

Nonemployer establishments, 2009	10,927	2,674,301
Total number of firms, 2007	14,689	3,425,510
Black-owned firms, percent, 2007	S	4.0%
American Indian- and Alaska Native-owned firms, percent, 2007	2.9%	1.3%
Asian-owned firms, percent, 2007	S	14.9%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	F	0.3%
Hispanic-owned firms, percent, 2007	S	16.5%
Women-owned firms, percent, 2007	26.9%	30.3%
Manufacturers shipments, 2007 ($1000)	877,020	491,372,092
Merchant wholesaler sales, 2007 ($1000)	D	598,456,486
Retail sales, 2007 ($1000)	1,726,357	455,032,270
Retail sales per capita, 2007	$13,428	$12,561
Accommodation and food services sales, 2007 ($1000)	209,017	80,852,787
Building permits, 2010	191	43,716
Federal spending, 2009	1,180,218	331,030,869[1]

Geography QuickFacts	Humboldt County	California
Land area in square miles, 2010	3,567.99	155,779.22
Persons per square mile, 2010	37.7	239.1
FIPS Code	023	06
Metropolitan or Micropolitan Statistical Area	Eureka-Arcata-Fortuna, CA Micro Area	

1: Includes data not distributed by county.

Population estimates for counties will be available in April, 2012 and for cities in June, 2012.

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Last Revised: Tuesday, 31-Jan-2012 16:48:00 EST

EXHIBIT

C D - 0 3

State & County QuickFacts

Sonoma County, California

People QuickFacts	Sonoma County	California
Population, 2011 estimate	NA	37,691,912
Population, 2010	483,878	37,253,956
Population, percent change, 2000 to 2010	5.5%	10.0%
Population, 2000	458,614	33,871,648
Persons under 5 years, percent, 2010	5.8%	6.8%
Persons under 18 years, percent, 2010	22.0%	25.0%
Persons 65 years and over, percent, 2010	13.9%	11.4%
Female persons, percent, 2010	50.8%	50.3%
White persons, percent, 2010 (a)	76.8%	57.6%
Black persons, percent, 2010 (a)	1.6%	6.2%
American Indian and Alaska Native persons, percent, 2010 (a)	1.3%	1.0%
Asian persons, percent, 2010 (a)	3.8%	13.0%
Native Hawaiian and Other Pacific Islander, percent, 2010 (a)	0.3%	0.4%
Persons reporting two or more races, percent, 2010	4.4%	4.9%
Persons of Hispanic or Latino origin, percent, 2010 (b)	24.9%	37.6%
White persons not Hispanic, percent, 2010	66.1%	40.1%
Living in same house 1 year & over, 2006-2010	84.7%	84.0%
Foreign born persons, percent, 2006-2010	16.6%	27.2%
Language other than English spoken at home, pct age 5+, 2006-2010	24.0%	43.0%
High school graduates, percent of persons age 25+, 2006-2010	86.2%	80.7%
Bachelor's degree or higher, pct of persons age 25+, 2006-2010	31.5%	30.1%
Veterans, 2006-2010	33,302	2,051,959
Mean travel time to work (minutes), workers age 16+, 2006-2010	25.1	26.9
Housing units, 2010	204,572	13,680,081
Homeownership rate, 2006-2010	62.4%	57.4%
Housing units in multi-unit structures, percent, 2006-2010	18.8%	30.7%
Median value of owner-occupied housing units, 2006-2010	$524,400	$458,500
Households, 2006-2010	184,033	12,392,852
Persons per household, 2006-2010	2.52	2.89
Per capita money income in past 12 months (2010 dollars) 2006-2010	$32,597	$29,188
Median household income 2006-2010	$63,274	$60,883
Persons below poverty level, percent, 2006-2010	10.3%	13.7%

Business QuickFacts	Sonoma County	California
Private nonfarm establishments, 2009	13,383	857,831[1]
Private nonfarm employment, 2009	149,366	12,833,709[1]
Private nonfarm employment, percent change 2000-2009	-8.4%	-0.4%[1]

EXHIBIT

C D - 0 4

Nonemployer establishments, 2009	40,063	2,674,301
Total number of firms, 2007	52,458	3,425,510
Black-owned firms, percent, 2007	S	4.0%
American Indian- and Alaska Native-owned firms, percent, 2007	1.0%	1.3%
Asian-owned firms, percent, 2007	S	14.9%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	S	0.3%
Hispanic-owned firms, percent, 2007	7.8%	16.5%
Women-owned firms, percent, 2007	30.4%	30.3%
Manufacturers shipments, 2007 ($1000)	5,841,879	491,372,092
Merchant wholesaler sales, 2007 ($1000)	3,953,592	598,456,486
Retail sales, 2007 ($1000)	6,427,191	455,032,270
Retail sales per capita, 2007	$13,929	$12,561
Accommodation and food services sales, 2007 ($1000)	1,005,419	80,852,787
Building permits, 2010	477	43,716
Federal spending, 2009	3,117,386	331,030,869[1]

Geography QuickFacts	**Sonoma County**	**California**
Land area in square miles, 2010	1,575.85	155,779.22
Persons per square mile, 2010	307.1	239.1
FIPS Code	097	06
Metropolitan or Micropolitan Statistical Area	Santa Rosa-Petaluma, CA Metro Area	

1: Includes data not distributed by county.

Population estimates for counties will be available in April, 2012 and for cities in June, 2012.

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Last Revised: Tuesday, 31-Jan-2012 16:48:09 EST

EXHIBIT

C D - 0 4

State & County QuickFacts

Los Angeles County, California

People QuickFacts	Los Angeles County	California
Population, 2011 estimate	NA	37,691,912
Population, 2010	9,818,605	37,253,956
Population, percent change, 2000 to 2010	3.1%	10.0%
Population, 2000	9,519,338	33,871,648
Persons under 5 years, percent, 2010	6.6%	6.8%
Persons under 18 years, percent, 2010	24.5%	25.0%
Persons 65 years and over, percent, 2010	10.9%	11.4%
Female persons, percent, 2010	50.7%	50.3%
White persons, percent, 2010 (a)	50.3%	57.6%
Black persons, percent, 2010 (a)	8.7%	6.2%
American Indian and Alaska Native persons, percent, 2010 (a)	0.7%	1.0%
Asian persons, percent, 2010 (a)	13.7%	13.0%
Native Hawaiian and Other Pacific Islander, percent, 2010 (a)	0.3%	0.4%
Persons reporting two or more races, percent, 2010	4.5%	4.9%
Persons of Hispanic or Latino origin, percent, 2010 (b)	47.7%	37.6%
White persons not Hispanic, percent, 2010	27.8%	40.1%
Living in same house 1 year & over, 2006-2010	86.8%	84.0%
Foreign born persons, percent, 2006-2010	35.6%	27.2%
Language other than English spoken at home, pct age 5+, 2006-2010	56.4%	43.0%
High school graduates, percent of persons age 25+, 2006-2010	75.9%	80.7%
Bachelor's degree or higher, pct of persons age 25+, 2006-2010	29.0%	30.1%
Veterans, 2006-2010	368,128	2,051,959
Mean travel time to work (minutes), workers age 16+, 2006-2010	29.0	26.9
Housing units, 2010	3,445,076	13,680,081
Homeownership rate, 2006-2010	48.2%	57.4%
Housing units in multi-unit structures, percent, 2006-2010	41.8%	30.7%
Median value of owner-occupied housing units, 2006-2010	$508,800	$458,500
Households, 2006-2010	3,217,889	12,392,852
Persons per household, 2006-2010	2.97	2.89
Per capita money income in past 12 months (2010 dollars) 2006-2010	$27,344	$29,188
Median household income 2006-2010	$55,476	$60,883
Persons below poverty level, percent, 2006-2010	15.7%	13.7%

Business QuickFacts	Los Angeles County	California
Private nonfarm establishments, 2009	245,523	857,831[1]

EXHIBIT

C D - 05

Private nonfarm employment, 2009	3,703,233	12,833,709[1]
Private nonfarm employment, percent change 2000-2009	-4.2%	-0.4%[1]
Nonemployer establishments, 2009	821,177	2,674,301
Total number of firms, 2007	1,046,940	3,425,510
Black-owned firms, percent, 2007	5.7%	4.0%
American Indian- and Alaska Native-owned firms, percent, 2007	1.4%	1.3%
Asian-owned firms, percent, 2007	17.5%	14.9%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	0.3%	0.3%
Hispanic-owned firms, percent, 2007	21.6%	16.5%
Women-owned firms, percent, 2007	30.2%	30.3%
Manufacturers shipments, 2007 ($1000)	153,343,705	491,372,092
Merchant wholesaler sales, 2007 ($1000)	198,435,837	598,456,486
Retail sales, 2007 ($1000)	119,111,840	455,032,270
Retail sales per capita, 2007	$12,236	$12,561
Accommodation and food services sales, 2007 ($1000)	20,238,148	80,852,787
Building permits, 2010	7,260	43,716
Federal spending, 2009	80,457,156	331,030,869[1]

Geography QuickFacts	**Los Angeles County**	**California**
Land area in square miles, 2010	4,057.88	155,779.22
Persons per square mile, 2010	2,419.6	239.1
FIPS Code	037	06
Metropolitan or Micropolitan Statistical Area	Los Angeles-Long Beach-Santa Ana, CA Metro Area	

1: Includes data not distributed by county.

Population estimates for counties will be available in April, 2012 and for cities in June, 2012.

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EXHIBIT

C D - 05

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HIGH WINDS

EXHIBIT HW

Station 46027 Event Summaries
Wind Speed (m/s) > 10.3 and

START DATE	TIME	DURATION	AVG	MAX	MIN
Dec 31,2009	2350	14 hrs	13.3	15.0	10.6
Jan 11,2010	1750	6 hrs	13.8	17.8	10.5
Jan 12,2010	0150	4 hrs	13.6	16.3	12.8
~~Jan 12,2010~~	0750	5 hrs	13.1	14.9	10.5
Jan 13,2010	0550	6 hrs	13.0	16.3	10.4
Jan 15,2010	1650	13 hrs	12.8	14.3	11.4
Jan 17,2010	1250	19 hrs	14.0	17.5	10.4
Jan 18,2010	1950	29 hrs	15.1	21.1	11.3
Jan 20,2010	0150	9 hrs	13.8	15.2	11.3
~~Jan 20,2010~~	1650	25 hrs	14.2	18.8	11.6
Jan 24,2010	0750	27 hrs	13.6	16.8	10.5
Feb 04,2010	1650	11 hrs	12.7	15.7	10.8
Feb 10,2010	2250	4 hrs	10.9	11.3	10.6
Feb 11,2010	2050	7 hrs	14.8	16.1	12.6
Feb 12,2010	1550	5 hrs	13.3	15.1	11.9
Feb 23,2010	1950	10 hrs	13.7	16.7	11.0
Feb 26,2010	1650	13 hrs	13.0	18.0	10.6
Mar 08,2010	2150	8 hrs	13.3	16.0	10.9
Mar 09,2010	2150	5 hrs	12.3	14.9	10.4
Mar 11,2010	1250	5 hrs	11.9	13.1	11.2
~~Mar 11,2010~~	1950	18 hrs	12.4	14.9	10.6
Mar 17,2010	1850	12 hrs	13.2	16.0	10.4
Mar 18,2010	1550	4 hrs	11.4	12.3	10.4
~~Mar 18,2010~~	2050	6 hrs	11.2	11.9	10.5
Mar 22,2010	2250	8 hrs	12.3	13.8	11.1
Mar 28,2010	1450	7 hrs	11.8	12.4	10.5
Mar 29,2010	0150	20 hrs	13.3	15.8	11.0
Apr 02,2010	0750	10 hrs	14.4	17.7	10.5
Apr 04,2010	0550	13 hrs	14.3	18.1	11.2
~~Apr 04,2010~~	2050	9 hrs	11.1	12.1	10.5
Apr 05,2010	1250	6 hrs	11.6	12.7	10.7
Apr 08,2010	1150	43 hrs	12.9	15.4	10.6
Apr 10,2010	2150	5 hrs	11.4	12.3	10.5
Apr 20,2010	1950	12 hrs	12.9	14.3	10.6
Apr 21,2010	0850	5 hrs	11.8	12.7	10.9
~~Apr 21,2010~~	1750	40 hrs	14.0	18.2	10.4
Apr 27,2010	0150	5 hrs	12.4	13.3	11.1
Apr 30,2010	2050	8 hrs	11.4	12.8	10.5
May 01,2010	2350	14 hrs	12.2	14.1	10.5
May 02,2010	1850	4 hrs	10.9	11.2	10.5
May 03,2010	2350	9 hrs	12.0	13.3	11.0
May 04,2010	1850	11 hrs	11.8	12.5	11.0
May 05,2010	1950	12 hrs	11.8	13.4	10.6
May 11,2010	1950	12 hrs	12.2	13.1	10.4
May 12,2010	2050	10 hrs	12.3	14.0	10.7
May 19,2010	1550	6 hrs	12.1	14.2	10.7
May 29,2010	0250	4 hrs	11.4	12.3	10.9
~~May 29,2010~~	2250	8 hrs	10.9	11.3	10.6
Jun 02,2010	1650	6 hrs	11.5	12.0	10.8
Jun 04,2010	0550	8 hrs	13.0	14.6	12.2
Jun 07,2010	1950	10 hrs	11.8	12.9	10.9
Jun 09,2010	1650	5 hrs	11.1	12.4	10.4
Jun 10,2010	2350	16 hrs	11.8	12.8	10.5
Jun 11,2010	1750	16 hrs	13.8	16.5	10.5
Jun 12,2010	1850	14 hrs	13.4	16.3	10.8
Jun 13,2010	1850	14 hrs	14.5	17.1	11.8
Jun 14,2010	1650	40 hrs	14.7	18.0	11.3
Jun 16,2010	2050	8 hrs	11.0	11.9	10.5
Jun 17,2010	1750	15 hrs	13.3	15.5	10.7

2010
Wind speeds > 23 mph
= 105 days

EXHIBIT
HW-01

Jun 20,2010	2050	11 hrs	12.0	13.5	11.0
Jun 21,2010	1850	9 hrs	11.8	12.6	10.8
Jun 26,2010	2150	7 hrs	11.1	12.5	10.4
Jun 27,2010	2250	4 hrs	11.5	12.5	10.5
Jun 28,2010	2050	8 hrs	11.0	11.4	10.4
Jun 29,2010	2150	9 hrs	11.5	12.6	10.4
Jul 02,2010	2150	86 hrs	14.1	18.2	10.5
Jul 12,2010	2250	6 hrs	11.4	12.6	10.4
Jul 16,2010	2250	5 hrs	10.8	11.6	10.4
Jul 17,2010	2150	9 hrs	11.3	12.1	10.5
Jul 18,2010	1950	10 hrs	11.6	13.0	10.4
Jul 19,2010	1350	15 hrs	13.7	16.3	10.6
Jul 20,2010	2050	10 hrs	13.4	15.7	10.5
Jul 21,2010	2050	7 hrs	11.5	12.4	11.0
Jul 22,2010	1950	10 hrs	14.3	16.4	11.9
Aug 06,2010	2150	8 hrs	11.7	12.5	11.0
Aug 22,2010	2150	8 hrs	12.5	13.6	11.2
Aug 23,2010	2150	6 hrs	11.7	12.1	11.4
Aug 26,2010	2150	31 hrs	12.6	15.1	10.6
Aug 28,2010	2150	9 hrs	11.8	12.6	10.5
Sep 01,2010	1950	8 hrs	11.1	11.8	10.5
Sep 04,2010	2150	10 hrs	13.2	15.1	11.0
Sep 05,2010	1050	27 hrs	12.9	16.6	10.8
Sep 06,2010	1550	15 hrs	13.3	15.6	10.6
Oct 05,2010	0350	14 hrs	12.1	12.9	11.0
~~Oct 05,2010~~	1950	8 hrs	13.5	14.9	11.9
Oct 10,2010	2250	12 hrs	11.8	13.3	10.5
Oct 11,2010	1750	12 hrs	12.2	13.8	10.5
Oct 24,2010	0550	5 hrs	12.9	14.7	10.8
Oct 31,2010	0250	5 hrs	11.4	11.9	10.8
Nov 07,2010	0150	5 hrs	12.3	13.0	11.3
Nov 09,2010	1350	9 hrs	13.0	16.5	10.4
Nov 12,2010	2250	4 hrs	11.6	12.4	10.7
Nov 14,2010	1950	12 hrs	11.7	13.8	10.5
Nov 15,2010	1550	11 hrs	10.9	11.9	10.5
Nov 18,2010	0650	5 hrs	12.3	13.8	11.7
Nov 20,2010	1850	5 hrs	12.4	12.8	11.5
Nov 23,2010	0750	6 hrs	11.5	13.0	10.7
Nov 26,2010	2150	9 hrs	11.6	13.6	10.8
Nov 30,2010	1250	6 hrs	11.0	11.9	10.4
Dec 01,2010	0450	5 hrs	12.7	14.6	11.5
Dec 08,2010	0350	6 hrs	11.8	13.0	10.8
Dec 09,2010	2150	9 hrs	11.7	13.3	10.5
Dec 14,2010	0150	4 hrs	12.2	13.2	11.3
Dec 18,2010	0450	4 hrs	11.2	12.7	10.5
~~Dec 18,2010~~	2150	4 hrs	11.2	13.3	10.5
Dec 19,2010	1950	5 hrs	11.8	14.3	10.4
Dec 20,2010	0150	9 hrs	12.1	13.8	11.4
~~Dec 20,2010~~	1950	22 hrs	12.2	15.3	10.8
Dec 21,2010	1850	9 hrs	13.8	16.0	10.9
Dec 23,2010	1450	4 hrs	10.7	11.1	10.4
Dec 24,2010	0750	5 hrs	11.4	12.8	10.5
~~Dec 24,2010~~	1350	5 hrs	11.3	12.2	10.4
Dec 25,2010	0250	8 hrs	11.3	12.5	10.5
Dec 26,2010	0250	15 hrs	12.8	15.2	10.5
Dec 28,2010	0150	26 hrs	13.5	17.3	10.5
Dec 29,2010	0450	4 hrs	12.9	13.4	12.7
~~Dec 29,2010~~	~~1150~~	6 hrs	12.0	13.3	10.9

Total Count: 117 − 12 = 105 days
Avg Duration: 11
Max Duration: 86

EXHIBIT

HW-01

Min Duration: 4

EXHIBIT

HW-01

Station 46027 Event Summaries
Wind Speed (m/s) > 10.3 and

START DATE	TIME	DURATION	AVG	MAX	MIN
Jan 01,2009	1450	8 hrs	11.5	12.6	10.6
Jan 05,2009	0350	12 hrs	12.1	14.3	10.6
Jan 08,2009	0850	4 hrs	12.5	13.6	11.4
Jan 09,2009	0350	6 hrs	11.3	12.0	10.4
Jan 25,2009	2350	6 hrs	11.4	12.6	10.9
Jan 28,2009	2350	5 hrs	11.5	12.3	10.8
Jan 31,2009	0750	4 hrs	10.7	11.3	10.4
~~Jan 31,2009~~	2050	7 hrs	11.6	12.8	11.0
Feb 07,2009	0050	11 hrs	12.6	13.9	11.2
Feb 10,2009	1550	8 hrs	13.5	15.7	11.1
Feb 11,2009	0550	6 hrs	12.1	13.5	11.2
Feb 12,2009	2150	4 hrs	11.3	13.4	10.5
Feb 13,2009	1050	14 hrs	13.6	16.9	10.8
Feb 15,2009	1050	4 hrs	13.5	15.8	11.3
Feb 23,2009	2350	21 hrs	12.2	13.8	10.4
Mar 02,2009	0650	4 hrs	15.0	16.4	12.2
Mar 03,2009	0250	21 hrs	13.7	17.3	10.4
Mar 07,2009	1950	12 hrs	13.0	15.8	10.5
Mar 10,2009	2150	7 hrs	12.1	13.3	11.0
Mar 14,2009	1950	9 hrs	11.8	13.1	10.5
Mar 15,2009	0850	15 hrs	13.1	15.0	10.5
Mar 26,2009	2050	11 hrs	11.6	13.1	10.5
Mar 27,2009	1850	16 hrs	12.6	14.6	11.1
Mar 29,2009	0350	7 hrs	12.1	13.5	10.4
~~Mar 29,2009~~	1850	12 hrs	12.7	14.5	10.6
Mar 30,2009	2150	7 hrs	12.2	13.8	11.5
Apr 03,2009	0450	4 hrs	12.2	12.9	11.0
~~Apr 03,2009~~	1950	11 hrs	11.8	13.2	10.5
Apr 14,2009	2050	8 hrs	12.8	13.7	11.6
Apr 15,2009	2050	5 hrs	10.9	11.2	10.6
Apr 22,2009	1450	48 hrs	13.2	16.9	10.5
Apr 24,2009	1750	13 hrs	12.4	13.8	10.4
Apr 25,2009	2150	10 hrs	12.0	13.4	10.6
Apr 27,2009	0350	4 hrs	12.2	13.1	10.6
May 04,2009	1650	14 hrs	13.2	17.6	10.5
May 07,2009	2350	11 hrs	11.6	12.9	10.9
May 08,2009	1850	14 hrs	13.1	15.1	10.7
May 09,2009	1750	13 hrs	12.9	14.4	10.4
May 19,2009	2350	33 hrs	13.0	16.5	10.7
May 21,2009	1850	11 hrs	13.5	14.7	11.7
May 22,2009	2050	9 hrs	13.0	14.2	11.3
May 23,2009	2050	9 hrs	12.3	13.7	11.4
May 24,2009	2050	7 hrs	12.5	13.4	11.8
May 25,2009	1950	10 hrs	13.5	15.3	11.1
May 26,2009	2050	11 hrs	11.6	12.7	10.8
May 27,2009	2250	5 hrs	12.3	13.1	10.8
Jun 19,2009	2150	33 hrs	12.2	14.6	10.5
Jun 21,2009	2050	14 hrs	12.5	14.3	10.4
Jun 23,2009	2050	6 hrs	12.0	13.9	11.0
Jun 25,2009	1850	12 hrs	14.0	15.6	11.9
Jun 26,2009	1250	19 hrs	13.7	16.2	10.8
Jun 27,2009	1950	12 hrs	13.4	15.9	10.4
Jun 28,2009	1850	11 hrs	13.2	14.8	10.6
Jun 29,2009	1450	39 hrs	14.3	17.6	10.5
Jul 14,2009	0150	4 hrs	12.1	13.6	10.4
~~Jul 14,2009~~	1750	12 hrs	12.6	15.4	10.6
Jul 26,2009	2150	6 hrs	10.9	11.1	10.6
Aug 08,2009	2150	8 hrs	12.2	13.1	11.2
Aug 14,2009	1850	18 hrs	13.0	15.7	10.4

2009
Wind speeds > 23mph
= 85 days

EXHIBIT

HW-02

Aug 15,2009	1750	14 hrs	13.8	16.1	10.6
Aug 16,2009	1850	10 hrs	13.6	16.2	10.9
Aug 21,2009	2150	7 hrs	12.3	13.5	11.0
Aug 22,2009	2050	9 hrs	13.3	15.0	11.0
Aug 23,2009	2050	7 hrs	14.4	15.8	12.4
Aug 29,2009	2150	7 hrs	12.4	13.7	11.3
Sep 17,2009	2150	7 hrs	12.5	13.8	11.1
Sep 19,2009	2150	17 hrs	11.8	12.5	10.7
Sep 20,2009	1950	9 hrs	12.3	14.2	10.5
Sep 26,2009	1850	11 hrs	12.5	14.3	10.6
Oct 01,2009	2150	9 hrs	12.1	13.1	10.8
Oct 02,2009	1850	13 hrs	11.7	13.2	10.5
Oct 05,2009	2350	4 hrs	11.4	12.1	10.6
Oct 07,2009	1550	14 hrs	12.5	15.0	10.8
Oct 09,2009	2050	11 hrs	12.0	13.3	10.7
Oct 10,2009	2050	8 hrs	12.2	14.0	10.7
Oct 13,2009	2150	19 hrs	13.0	14.8	10.6
Nov 05,2009	1750	12 hrs	12.8	15.9	10.8
Nov 09,2009	1550	8 hrs	12.1	14.4	10.4
Nov 16,2009	1150	4 hrs	10.8	11.1	10.5
~~Nov 16,2009~~	~~2~~050	16 hrs	14.3	18.2	11.4
Nov 19,2009	1350	7 hrs	11.0	11.5	10.6
~~Nov 19,2009~~	2350	13 hrs	12.8	16.2	10.9
Nov 22,2009	0050	9 hrs	14.5	18.4	10.8
Nov 27,2009	1250	22 hrs	12.9	15.2	10.9
Nov 28,2009	2150	5 hrs	11.4	12.5	10.5
Dec 05,2009	0450	6 hrs	12.5	13.0	11.9
~~Dec 05,2009~~	~~2~~150	4 hrs	11.1	11.9	10.5
Dec 15,2009	0350	22 hrs	12.8	15.6	10.8
Dec 20,2009	2150	14 hrs	11.3	12.7	10.4
Dec 27,2009	1250	8 hrs	11.4	13.0	10.4
Dec 29,2009	1850	7 hrs	13.0	15.2	11.3
Dec 31,2009	1650	7 hrs	12.6	14.0	10.8

Total Count: 92 $-7 = 85$ days
Avg Duration: 11
Max Duration: 48
Min Duration: 4

EXHIBIT

HW-02

LICENSES

EXHIBIT L

	COUNTY	STAMPS SOLD QTY	STAMPS SOLD AMT
00	OUT OF STATE	3,141	99,726.75
01	ALAMEDA	31,719	1,007,078.25
02	ALPINE	937	29,749.75
03	AMADOR	7,184	228,092.00
04	BUTTE	23,903	758,920.25
05	CALAVERAS	7,187	228,187.25
06	COLUSA	2,011	63,849.25
07	CONTRA COSTA	30,944	982,472.00
08	DEL NORTE	3,956	125,603.00
09	EL DORADO	13,505	428,783.75
10	FRESNO	35,329	1,121,695.75
11	GLENN	3,344	106,172.00
12	HUMBOLDT	13,684	434,467.00
13	IMPERIAL	3,287	104,362.25
14	INYO	16,379	520,033.25
15	KERN	35,906	1,140,015.50
16	KINGS	4,951	157,194.25
17	LAKE	8,613	273,462.75
18	LASSEN	5,745	182,403.75
19	LOS ANGELES	77,790	2,469,832.50
20	MADERA	7,840	248,920.00
21	MARIN	10,052	319,151.00
22	MARIPOSA	3,377	107,219.75
23	MENDOCINO	11,432	362,966.00
24	MERCED	11,619	368,903.25
25	MODOC	1,594	50,609.50
26	MONO	18,309	581,310.75
27	MONTEREY	9,945	315,753.75
28	NAPA	7,262	230,568.50
29	NEVADA	11,927	378,682.25
30	ORANGE	39,036	1,239,393.00
31	PLACER	19,136	607,568.00
32	PLUMAS	6,524	207,137.00
33	RIVERSIDE	30,162	957,643.50
34	SACRAMENTO	70,630	2,242,502.50
35	SAN BENITO	1,893	60,102.75
36	SAN BERNARDINO	39,545	1,255,553.75
37	SAN DIEGO	69,875	2,218,531.25
38	SAN FRANCISCO	3,734	118,554.50
39	SAN JOAQUIN	38,354	1,217,739.50
40	SAN LUIS OBISPO	13,752	436,626.00
41	SAN MATEO	9,487	301,212.25
42	SANTA BARBARA	12,628	400,939.00
43	SANTA CLARA	28,039	890,238.25
44	SANTA CRUZ	11,330	359,727.50
45	SHASTA	29,644	941,197.00
46	SIERRA	946	30,035.50
47	SISKIYOU	8,952	284,226.00
48	SOLANO	20,852	662,051.00
49	SONOMA	26,036	826,643.00
50	STANISLAUS	26,826	851,725.50
51	SUTTER	5,519	175,228.25

EXHIBIT

L - 01

	COUNTY	STAMPS SOLD QTY	STAMPS SOLD AMT
52	TEHAMA	7,711	244,824.25
53	TRINITY	3,630	115,252.50
54	TULARE	13,376	424,688.00
55	TUOLUMNE	10,594	336,359.50
56	VENTURA	17,655	560,546.25
57	YOLO	6,933	220,122.75
58	YUBA	7,704	244,602.00
99	UNDISTRIBUTED INVENTORY	241,313	7,661,687.75
TOTAL SOLD FOR 2005 SPRT FISH RES LIC		1,244,688	39,518,844.00

*** END OF REPORT ***

EXHIBIT

L - 01

Sport Fishing

Items Reported by License Year
As Of November 30, 2011

Licenses	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Resident Fishing	1,265,420	1,229,770	1,180,641	1,124,024	1,268,728	1,245,007	1,256,784	1,283,454	1,203,586	1,179,195
Resident Fishing Voucher	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lifetime Fishing	2,447	3,260	4,235	5,464	7,101	7,632	8,546	9,440	10,145	10,804
Non-Resident Fishing (I Yr.)	11,663	11,570	11,234	10,504	11,400	11,253	11,457	11,442	10,623	10,380
Non-Resident Fishing (I0 Day)	14,413	13,897	12,247	12,098	15,362	15,786	16,535	17,268	16,009	14,495
1-Day Sport Fishing	N/A	N/A	N/A	N/A	535,114	553,081	598,563	608,606	570,751	572,027
2-Day Sport Fishing	443,207	459,701	476,020	472,212	167,056	152,292	148,296	146,590	134,079	128,037
Reduced Fee Sport Fishing	19,394	18,357	17,387	12,230	11,862	11,636	11,374	10,427	10,049	10,468
Free Sport Fishing	Not Avail.	Not Avail.	Not Avail.	Not Avail.	Not Avail.	Not Avail.	Not Avail.	Not Avail.	Not Avail.	Not Avail.
Discontinued Items:										
Resident Upgrade Stamp	16,178	16,238	16,979	14,781	N/A	N/A	N/A	N/A	N/A	N/A
Resident Pacific Ocean Only	155,974	152,795	156,542	142,983	N/A	N/A	N/A	N/A	N/A	N/A
Pacific Ocean (1 Day)	105,800	98,849	95,767	83,774	N/A	N/A	N/A	N/A	N/A	N/A
Pacific Ocean/Enhancement (1 Day)	241,059	230,237	222,888	205,874	N/A	N/A	N/A	N/A	N/A	N/A
Sub Total - Sportfishing Licenses	*2,275,555*	*2,234,674*	*2,193,940*	*2,083,944*	*2,016,623*	*1,996,687*	*2,051,555*	*2,087,227*	*1,955,242*	*1,925,406*
Second Rod Sport Fish Stamp	178,130	178,783	184,472	185,596	176,861	178,766	186,172	195,375	220,740	227,749
Lifetime Second Rod Sport Fish Stamp	Not Avail.	Not Avail.	Not Avail.	Not Avail.	3,429	3,639	4,006	4,360	4,648	4,881
Spiny Lobster Report Card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	27,472	32,343
Sport Abalone Report Card	39,277	40,857	35,857	36,769	36,406	35,047	37,391	39,789	37,407	38,553
North Coast Salmon Report Card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,583	15,563
Lifetime North Coast Salmon Report Card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4,649	4,890
Steelhead Report Card	43,980	51,246	55,744	55,757	51,827	47,091	40,558	50,162	44,994	43,814
Lifetime Steelhead Report Card	Not Avail.	Not Avail.	Not Avail.	Not Avail.	3,430	3,639	4,006	4,360	4,649	4,894
Sturgeon Fishing Report Card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Avail.	Not Avail.	Not Avail.
Ocean Enhancement	282,832	273,477	273,124	251,978	271,407	259,940	270,327	270,440	257,009	250,594
Lifetime Ocean Enhancement	Not Avail.	Not Avail.	Not Avail.	Not Avail.	3,429	3,639	4,006	4,360	4,648	4,881
Discontinued Items:										
Bay-Delta Enhancement Stamp	N/A	N/A	N/A	N/A	321,486	305,080	293,371	306,955	278,547	280,327
Lifetime Bay-Delta Enhancement Stamp	N/A	N/A	N/A	N/A	3,429	3,639	4,006	4,360	4,648	4,881
Sport Salmon Punch Card	33,741	40,862	42,234	41,467	37,448	29,921	24,921	32,035	N/A	N/A
Lifetime Sport Salmon Punch Card	Not Avail.	Not Avail.	Not Avail.	Not Avail.	3,429	3,639	4,006	4,360	N/A	N/A
Striped Bass Stamp	304,570	302,321	302,152	305,589	N/A	N/A	N/A	N/A	N/A	N/A
Sub Total - Sportfishing Stamps	*882,530*	*887,546*	*893,583*	*877,156*	*912,581*	*874,040*	*872,770*	*916,556*	*901,994*	*913,370*
TOTAL SPORT FISHING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Footnote:
North Coast Salmon Report Card and Lifetime North Coast Salmon Report Card - In 2008 and 2009 was good in Klamath & Trinity Rivers only. In 2010 was good in Klamath, Trinity & Smith Rivers only.

EXHIBIT L - 02

U.S. Department of Justice

United States Marshals Service

Northern District of California

San Francisco, CA. 94102

December 7, 2011

MEMORANDUM TO: Mark Kolc
Judicial Security Inspector

FROM: Donald M. O'Keefe
United States Marshal

SUBJECT: Tribal Identification Cards

Please advise the Site Supervisor for AKAL Security that Tribal identification cards will be accepted as a legitimate form of government identification at all our court sites in the Northern District of California.

This change in procedure will bring us in line with the Department of Homeland Security, which currently accepts Tribal identification cards at security checkpoints throughout the United States.

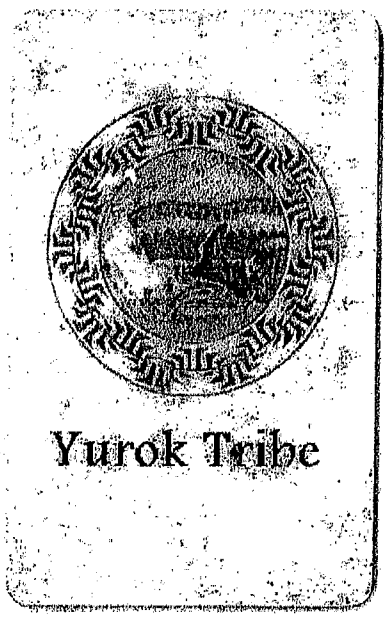
I have attached an example of a Tribal identification card for reference.

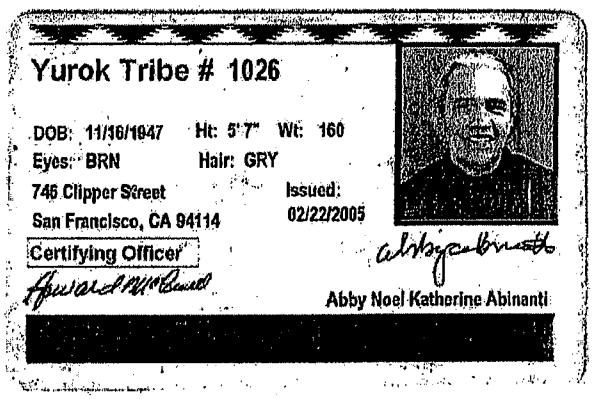
Cc: Chief Deputy U.S. Marshal Jack Salas
Acting Chief Deputy U.S. Marshal Marc Harwell

EXHIBIT

L - 0 3

SAMPLE





EXHIBIT

L - 03

MINUS TIDES

EXHIBIT MT

Crescent City, California

January 2010

Fri 01	Sat 02
High Tide 6.45 ft	High Tide 6.74 ft
00:15	00:57
Low Tide 3.18 ft	Low Tide 2.91 ft
05:12	06:06
Sunrise	Sunrise
07:44	07:44
Moonset	Moonset
08:33	09:11
High Tide 8.70 ft	High Tide 8.49 ft
11:08	11:59
Sunset	Sunset
16:56	16:57
Low Tide −1.72 ft	Low Tide −1.48 ft
18:15	18:58
Moonrise	Moonrise
18:25	19:45

Sun 03	Mon 04	Tue 05	Wed 06	Thu 07	Fri 08	Sat 09
				Moonrise		
High Tide 7.00 ft	High Tide 7.23 ft	High Tide 7.41 ft		00:41	Moonrise	
01:39	02:22	03:06	High Tide 7.52 ft	Last Quarter	01:50	Moonrise
Low Tide 2.64 ft	Sunrise	Sunrise	03:51	02:41	High Tide 7.56 ft	02:58
07:03	07:44	07:44	Sunrise	High Tide 7.57 ft	05:30	High Tide 7.52 ft
Sunrise	Low Tide 2.39 ft	Low Tide 2.12 ft	07:44	04:39	Sunrise	06:24
07:44	08:02	09:06	Low Tide 1.83 ft	Sunrise	07:43	Sunrise
Moonset	Moonset	Moonset	10:16	07:43	Moonset	07:43
09:44	10:12	10:38	Moonset	Low Tide 1.47 ft	12:00	Moonset
High Tide 8.02 ft	High Tide 7.32 ft	High Tide 6.49 ft	11:03	11:30	Low Tide 1.05 ft	12:34
12:52	13:48	14:50	High Tide 5.67 ft	Moonset	12:43	Low Tide 0.61 ft
Sunset	Sunset	Sunset	16:00	11:30	Sunset	13:51
16:58	16:59	17:00	Sunset	Sunset	17:03	Sunset
Low Tide −0.99 ft	Low Tide −0.28 ft	Low Tide 0.58 ft	17:01	17:02	High Tide 4.80 ft	17:04
19:42	20:25	21:10	Low Tide 1.49 ft	High Tide 5.05 ft	18:59	High Tide 4.92 ft
Moonrise	Moonrise	Moonrise	21:56	17:24	Low Tide 3.07 ft	20:28
21:03	22:18	23:30		Low Tide 2.35 ft	23:48	
				22:48		

Sun 10	Mon 11	Tue 12	Wed 13	Thu 14	Fri 15	Sat 16
Low Tide 3.57 ft	Low Tide 3.80 ft	Low Tide 3.84 ft	Low Tide 3.75 ft	Low Tide 3.61 ft	High Tide 6.06 ft	High Tide 6.18 ft
00:55	02:03	03:03	03:54	04:37	00:17	00:47
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 3.45 ft	Low Tide 3.28 ft
04:03	05:03	05:58	06:44	07:23	05:17	05:55
High Tide 7.48 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
07:19	07:43	07:42	07:42	07:41	07:41	07:41
Sunrise	High Tide 7.47 ft	High Tide 7.48 ft	High Tide 7.49 ft	High Tide 7.49 ft	Moonrise	Moonrise
07:43	08:12	09:00	09:45	10:25	07:56	08:23
Moonset	Moonset	Moonset	Moonset	Moonset	High Tide 7.42 ft	High Tide 7.27 ft
13:13	13:59	14:52	15:50	16:50	11:03	11:40
Low Tide 0.22 ft	Low Tide −0.07 ft	Low Tide −0.26 ft	Low Tide −0.35 ft	Sunset	Sunset	Sunset
14:49	15:38	16:21	16:59	17:10	17:11	17:12
Sunset	Sunset	Sunset	Sunset	Low Tide −0.36 ft	Moonset	Low Tide −0.11 ft
17:05	17:06	17:07	17:09	17:33	17:52	18:36
High Tide 5.21 ft	High Tide 5.50 ft	High Tide 5.73 ft	High Tide 5.91 ft	New Moon	Low Tide −0.28 ft	Moonset
21:38	22:31	23:12	23:46	23:13	18:05	18:53

Sun 17	Mon 18	Tue 19	Wed 20	Thu 21	Fri 22	Sat 23
High Tide 6.30 ft	High Tide 6.41 ft	High Tide 6.51 ft	High Tide 6.60 ft	High Tide 6.69 ft	High Tide 6.79 ft	Moonset
01:15	01:43	02:11	02:39	03:10	03:45	01:02
Low Tide 3.12 ft	Low Tide 2.97 ft	Sunrise	Sunrise	Sunrise	Sunrise	First Quarter
06:33	07:13	07:39	07:38	07:38	07:37	02:54
Sunrise	Sunrise	Low Tide 2.81 ft	Low Tide 2.63 ft	Low Tide 2.41 ft	Low Tide 2.12 ft	High Tide 6.90 ft
07:40	07:39	07:56	08:42	09:35	10:36	04:26
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Sunrise
08:48	09:10	09:31	09:52	10:14	10:39	07:37

EXHIBIT

MT-01

High Tide 7.01 ft
12:16
Sunset
17:13
Low Tide 0.17 ft
19:05
Moonset
19:53

High Tide 6.65 ft
12:53
Sunset
17:14
Low Tide 0.55 ft
19:33
Moonset
20:53

High Tide 6.19 ft
13:33
Sunset
17:16
Low Tide 1.02 ft
20:01
Moonset
21:53

High Tide 5.66 ft
14:18
Sunset
17:17
Low Tide 1.56 ft
20:30
Moonset
22:54

High Tide 5.12 ft
15:12
Sunset
17:18
Low Tide 2.13 ft
21:02
Moonset
23:57

High Tide 4.65 ft
16:22
Sunset
17:19
Low Tide 2.71 ft
21:38

Moonrise
11:08
Low Tide 1.71 ft
11:44
Sunset
17:20
High Tide 4.39 ft
17:52
Low Tide 3.25 ft
22:26

Sun 24

Moonset
02:10
High Tide 7.05 ft
05:16
Sunrise
07:36
Moonrise
11:44
Low Tide 1.15 ft
12:53
Sunset
17:22
High Tide 4.48 ft
19:31
Low Tide 3.67 ft
23:33

Mon 25

Moonset
03:19
High Tide 7.27 ft
06:14
Sunrise
07:35
Moonrise
12:30
Low Tide 0.49 ft
13:56
Sunset
17:23
High Tide 4.85 ft
20:49

Tue 26

Low Tide 3.86 ft
00:52
Moonset
04:26
High Tide 7.59 ft
07:16
Sunrise
07:34
Moonrise
13:26
Low Tide −0.19 ft
14:52
Sunset
17:24
High Tide 5.31 ft
21:44

Wed 27

Low Tide 3.77 ft
02:07
Moonset
05:27
Sunrise
07:33
High Tide 7.96 ft
08:17
Moonrise
14:35
Low Tide −0.80 ft
15:41
Sunset
17:25
High Tide 5.79 ft
22:28

Thu 28

Low Tide 3.44 ft
03:12
Moonset
06:19
Sunrise
07:32
High Tide 8.02 ft
09:14
Moonrise
15:52
Low Tide −1.24 ft
16:28
Sunset
17:27
High Tide 6.27 ft
23:08

Fri 29

Low Tide 2.98 ft
04:09
Moonset
07:03
Sunrise
07:31
High Tide 8.34 ft
10:08
Low Tide −1.44 ft
17:11
Moonrise
17:13
Sunset
17:28
Full Moon
22:18
High Tide 6.72 ft
23:46

Sat 30

Low Tide 2.46 ft
05:04
Sunrise
07:30
Moonset
07:39
High Tide 8.54 ft
11:01
Sunset
17:29
Low Tide −1.36 ft
17:53
Moonrise
18:34

Sun 31

High Tide 7.14 ft
00:24
Low Tide 1.95 ft
05:57
Sunrise
07:29
Moonset
08:10
High Tide 8.25 ft
11:54
Sunset
17:31
Low Tide −1.01 ft
18:34
Moonrise
19:53

EXHIBIT

MT-01

Crescent City, California

February 2010

Mon 01	Tue 02	Wed 03	Thu 04	Fri 05	Sat 06
				Moonrise	
High Tide 7.47 ft	High Tide 7.70 ft	High Tide 7.78 ft		00:47	Moonrise
01:03	01:42	02:22	High Tide 7.71 ft	High Tide 7.52 ft	01:54
Low Tide 1.53 ft	Sunrise	Sunrise	03:05	03:52	High Tide 7.25 ft
06:51	07:27	07:26	Sunrise	Sunrise	04:45
Sunrise	Low Tide 1.22 ft	Low Tide 1.05 ft	07:25	07:24	Sunrise
07:28	07:46	08:44	Low Tide 0.98 ft	Moonset	07:23
Moonset	Moonset	Moonset	09:47	10:34	Moonset
08:38	09:04	09:32	Moonset	Low Tide 0.95 ft	11:13
High Tide 7.76 ft	High Tide 7.04 ft	High Tide 6.23 ft	10:01	10:56	Low Tide 0.88 ft
12:47	13:42	14:41	High Tide 5.47 ft	Last Quarter	12:10
Sunset	Sunset	Sunset	15:49	15:50	Sunset
17:32	17:33	17:34	Sunset	High Tide 4.90 ft	17:38
Low Tide -0.41 ft	Low Tide 0.37 ft	Low Tide 1.24 ft	17:36	17:10	High Tide 4.69 ft
19:15	19:55	20:36	Low Tide 2.12 ft	Sunset	18:47
Moonrise	Moonrise	Moonrise	21:20	17:37	Low Tide 3.51 ft
21:10	22:24	23:36		Low Tide 2.90 ft	23:15
				22:11	

Sun 07	Mon 08	Tue 09	Wed 10	Thu 11	Fri 12	Sat 13
	Low Tide 3.84 ft	Low Tide 3.87 ft	Low Tide 3.68 ft	Low Tide 3.41 ft	Low Tide 3.10 ft	Low Tide 2.78 ft
Moonrise	00:35	01:53	02:55	03:44	04:25	05:02
02:57	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
High Tide 7.01 ft	03:54	04:43	05:24	05:58	06:27	06:53
05:45	High Tide 6.86 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
Sunrise	06:51	07:19	07:18	07:17	07:16	07:14
07:22	Sunrise	High Tide 6.86 ft	High Tide 6.93 ft	High Tide 7.03 ft	High Tide 7.09 ft	High Tide 7.07 ft
Moonset	07:21	07:53	08:48	09:34	10:15	10:52
11:57	Moonset	Moonset	Moonset	Moonset	Moonset	Low Tide 0.11 ft
Low Tide 0.72 ft	12:47	13:43	14:43	15:44	16:45	17:37
13:23	Low Tide 0.51 ft	Low Tide 0.30 ft	Low Tide 0.13 ft	Low Tide 0.04 ft	Low Tide 0.03 ft	Moonset
Sunset	14:26	15:18	16:01	16:37	17:08	17:46
17:39	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
High Tide 4.84 ft	17:41	17:42	17:43	17:45	17:46	17:47
20:19	High Tide 5.13 ft	High Tide 5.42 ft	High Tide 5.66 ft	High Tide 5.88 ft	High Tide 6.08 ft	New Moon
	21:25	22:11	22:45	23:15	23:41	18:53

Sun 14	Mon 15	Tue 16	Wed 17	Thu 18	Fri 19	Sat 20
High Tide 6.28 ft	High Tide 6.47 ft	High Tide 6.62 ft	High Tide 6.74 ft	High Tide 6.81 ft	High Tide 6.85 ft	
00:06	00:30	00:54	01:20	01:46	02:16	High Tide 6.86 ft
Low Tide 2.47 ft	Low Tide 2.18 ft	Low Tide 1.92 ft	Sunrise	Sunrise	Sunrise	02:51
05:38	06:13	06:50	07:09	07:07	07:06	Sunrise
Sunrise	Sunrise	Sunrise	Low Tide 1.71 ft	Low Tide 1.53 ft	Low Tide 1.39 ft	07:05
07:13	07:12	07:10	07:28	08:10	08:58	Moonrise
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	09:44
07:15	07:37	07:58	08:20	08:44	09:11	Low Tide 1.26 ft
High Tide 6.95 ft	High Tide 6.73 ft	High Tide 6.41 ft	High Tide 6.01 ft	High Tide 5.55 ft	High Tide 5.07 ft	09:53
11:29	12:05	12:42	13:22	14:06	14:59	High Tide 4.65 ft
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	16:05
17:48	17:50	17:51	17:52	17:53	17:55	Sunset
Low Tide 0.30 ft	Low Tide 0.59 ft	Low Tide 0.97 ft	Low Tide 1.42 ft	Low Tide 1.93 ft	Low Tide 2.45 ft	17:56
18:04	18:31	18:57	19:24	19:52	20:23	Low Tide 2.96 ft
Moonset	Moonset	Moonset	Moonset	Moonset	Moonset	21:01
18:46	19:46	20:47	21:49	22:53	23:58	

Sun 21	Mon 22	Tue 23	Wed 24	Thu 25	Fri 26	Sat 27
Moonset	Moonset	Moonset	Low Tide 3.73 ft	Low Tide 3.36 ft	Low Tide 2.74 ft	Low Tide 2.01 ft
01:05	02:10	03:12	00:41	02:01	03:06	04:03
High Tide 6.86 ft	High Tide 6.86 ft	High Tide 6.94 ft	Moonset	Moonset	Moonset	Moonset
03:35	04:31	05:40	04:06	04:53	05:31	06:05
Sunrise	Sunrise	Sunrise	High Tide 7.15 ft	Sunrise	Sunrise	Sunrise
07:03	07:02	07:00	06:54	06:57	06:56	06:54
Moonrise	Moonrise	Moonrise	Sunrise	High Tide 7.46 ft	High Tide 7.75 ft	High Tide 7.91 ft
10:24	11:14	12:14	06:59	08:03	09:06	10:03

EXHIBIT

MT-02

Low Tide 1.08 ft 11:00 First Quarter 16:42 High Tide 4.41 ft 17:33 Sunset 17:57 Low Tide 3.42 ft 21:52	Low Tide 0.76 ft 12:14 Sunset 17:58 High Tide 4.51 ft 19:10 Low Tide 3.73 ft 23:09	Low Tide 0.31 ft 13:24 Sunset 17:59 High Tide 4.88 ft 20:23	Moonrise 13:25 Low Tide −0.19 ft 14:25 Sunset 18:01 High Tide 5.37 ft 21:14	Moonrise 14:42 Low Tide −0.61 ft 15:16 Sunset 18:02 High Tide 5.90 ft 21:56	Moonrise 16:01 Low Tide −0.85 ft 16:03 Sunset 18:03 High Tide 6.46 ft 22:33	Low Tide −0.86 ft 16:45 Moonrise 17:21 Sunset 18:04 High Tide 6.98 ft 23:10

Sun 28

Low Tide 1.28 ft
04:55
Moonset
06:34
Sunrise
06:53
Full Moon
08:38
High Tide 7.86 ft
10:57
Low Tide −0.63 ft
17:26
Sunset
18:05
Moonrise
18:40
High Tide 7.42 ft
23:46

EXHIBIT

MT-02

Crescent City, California

March 2010

Mon 01	Tue 02	Wed 03	Thu 04	Fri 05	Sat 06
	High Tide 7.72 ft	High Tide 7.84 ft	High Tide 7.76 ft		Moonrise
Low Tide 0.65 ft	00:23	01:00	01:40	High Tide 7.49 ft	00:45
05:46	Low Tide 0.20 ft	Sunrise	Sunrise	02:21	High Tide 7.09 ft
Sunrise	06:36	06:48	06:46	Sunrise	03:07
06:51	Sunrise	Low Tide -0.02 ft	Low Tide -0.02 ft	06:45	Sunrise
Moonset	06:49	07:27	08:19	Moonset	06:43
07:02	Moonset	Moonset	Moonset	09:10	Moonset
High Tide 7.60 ft	07:30	08:00	08:32	Low Tide 0.17 ft	09:53
11:50	High Tide 7.14 ft	High Tide 6.54 ft	High Tide 5.89 ft	09:16	Low Tide 0.45 ft
Low Tide -0.18 ft	12:42	13:36	14:34	High Tide 5.29 ft	10:19
18:06	Sunset	Sunset	Sunset	15:38	High Tide 4.84 ft
Sunset	18:08	18:09	18:10	Sunset	16:54
18:07	Low Tide 0.44 ft	Low Tide 1.15 ft	Low Tide 1.89 ft	18:11	Sunset
Moonrise	18:45	19:25	20:06	Low Tide 2.59 ft	18:13
19:57	Moonrise	Moonrise	Moonrise	20:50	Low Tide 3.18 ft
	21:13	22:27	23:38		21:43

Sun 07	Mon 08	Tue 09	Wed 10	Thu 11	Fri 12	Sat 13
Moonrise						
01:46		Low Tide 3.71 ft	Low Tide 3.52 ft	Low Tide 3.16 ft	Low Tide 2.72 ft	Low Tide 2.26 ft
High Tide 6.64 ft	Moonrise	00:22	01:42	02:42	03:27	04:07
04:01	02:38	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
Sunrise	High Tide 6.27 ft	03:22	03:59	04:30	04:57	05:20
06:41	05:07	High Tide 6.08 ft	Sunrise	Sunrise	Sunrise	Sunrise
Last Quarter	Sunrise	06:21	06:36	06:35	06:33	06:31
07:44	06:40	Sunrise	High Tide 6.08 ft	High Tide 6.19 ft	High Tide 6.32 ft	High Tide 6.40 ft
Moonset	Moonset	06:38	07:31	08:29	09:18	10:01
10:42	11:37	Moonset	Moonset	Moonset	Moonset	Low Tide 0.53 ft
Low Tide 0.68 ft	Low Tide 0.77 ft	12:36	13:36	14:37	15:38	16:32
11:29	12:44	Low Tide 0.72 ft	Low Tide 0.61 ft	Low Tide 0.52 ft	Low Tide 0.49 ft	Moonset
Sunset	Sunset	13:50	14:43	15:26	16:01	16:38
18:14	18:15	Sunset	Sunset	Sunset	Sunset	Sunset
High Tide 4.68 ft	High Tide 4.79 ft	18:16	18:17	18:18	18:20	18:21
18:24	19:49	High Tide 5.04 ft	High Tide 5.30 ft	High Tide 5.56 ft	High Tide 5.83 ft	High Tide 6.09 ft
Low Tide 3.59 ft		20:49	21:30	22:02	22:29	22:53
22:54						

Sun 14	Mon 15	Tue 16	Wed 17	Thu 18	Fri 19	Sat 20
	High Tide 6.35 ft					
	00:17	High Tide 6.57 ft	High Tide 6.73 ft	High Tide 6.84 ft	High Tide 6.89 ft	
Low Tide 1.79 ft	Low Tide 1.35 ft	00:41	01:05	01:31	02:00	High Tide 6.87 ft
05:43	06:17	Low Tide 0.97 ft	Sunrise	Sunrise	Sunrise	02:32
Moonrise	Moonrise	06:52	07:25	07:23	07:21	Sunrise
06:42	07:04	Moonrise	Low Tide 0.65 ft	Low Tide 0.42 ft	Low Tide 0.29 ft	07:19
Sunrise	Sunrise	07:26	07:27	08:04	08:45	Moonrise
07:30	07:28	Sunrise	Moonrise	Moonrise	Moonrise	09:24
High Tide 6.41 ft	High Tide 6.35 ft	07:26	07:49	08:16	08:47	Low Tide 0.25 ft
11:40	12:18	High Tide 6.20 ft	High Tide 5.98 ft	High Tide 5.69 ft	High Tide 5.34 ft	09:31
Low Tide 0.66 ft	New Moon	12:56	13:35	14:17	15:03	High Tide 4.98 ft
18:01	14:03	Low Tide 1.17 ft	Low Tide 1.52 ft	Sunset	Sunset	15:57
Moonset	Low Tide 0.88 ft	18:55	19:23	19:26	19:28	Sunset
18:39	18:28	Sunset	Sunset	Low Tide 1.92 ft	Low Tide 2.34 ft	19:29
Sunset	Sunset	19:24	19:25	19:52	20:23	Low Tide 2.76 ft
19:22	19:23	Moonset	Moonset	Moonset	Moonset	20:59
	Moonset	20:41	21:45	22:50	23:56	
	19:40					

Sun 21	Mon 22	Tue 23	Wed 24	Thu 25	Fri 26	Sat 27
Moonset	Moonset	Moonset	Low Tide 3.51 ft	Low Tide 3.19 ft	Low Tide 2.53 ft	Low Tide 1.68 ft
01:02	02:04	02:59	00:14	01:45	03:00	04:01

EXHIBIT

MT-03

High Tide 6.79 ft	High Tide 6.66 ft	First Quarter	Moonset	Moonset	Moonset	Moonset
03:11	04:00	04:00	03:47	04:27	05:01	05:32
Sunrise	Sunrise	High Tide 6.50 ft	High Tide 6.40 ft	Sunrise	Sunrise	Sunrise
07:18	07:16	05:02	06:20	07:11	07:09	07:07
Moonrise	Moonrise	Sunrise	Sunrise	High Tide 6.45 ft	High Tide 6.62 ft	High Tide 6.80 ft
10:10	11:06	07:14	07:13	07:41	08:55	10:00
Low Tide 0.27 ft	Low Tide 0.29 ft	Moonrise	Moonrise	Moonrise	Low Tide -0.21 ft	Low Tide -0.18 ft
10:25	11:29	12:11	13:22	14:38	15:43	16:30
High Tide 4.68 ft	High Tide 4.57 ft	Low Tide 0.23 ft	Low Tide 0.07 ft	Low Tide -0.11 ft	Moonrise	Moonrise
17:03	18:23	12:40	13:50	14:51	15:55	17:12
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
19:30	19:31	19:32	19:33	19:34	19:35	19:36
Low Tide 3.14 ft	Low Tide 3.44 ft	High Tide 4.72 ft	High Tide 5.10 ft	High Tide 5.60 ft	High Tide 6.16 ft	High Tide 6.72 ft
21:43	22:47	19:43	20:46	21:34	22:15	22:53

Sun 28	**Mon 29**	**Tue 30**	**Wed 31**
Low Tide 0.79 ft	Low Tide -0.01 ft	High Tide 7.57 ft	High Tide 7.73 ft
04:55	05:45	00:06	00:43
Moonset	Moonset	Low Tide -0.61 ft	Sunrise
06:00	06:27	06:33	07:01
Sunrise	Sunrise	Moonset	Low Tide -0.96 ft
07:06	07:04	06:56	07:19
High Tide 6.89 ft	High Tide 6.86 ft	Sunrise	Moonset
10:59	11:54	07:02	07:28
Low Tide 0.02 ft	Low Tide 0.37 ft	High Tide 6.68 ft	High Tide 6.38 ft
17:14	17:55	12:47	13:39
Moonrise	Full Moon	Low Tide 0.83 ft	Low Tide 1.35 ft
18:29	19:25	18:36	19:16
Sunset	Sunset	Sunset	Sunset
19:38	19:39	19:40	19:41
High Tide 7.21 ft	Moonrise	Moonrise	Moonrise
23:30	19:45	21:00	22:15

EXHIBIT

MT-03

Crescent City, California

April 2010

				Thu 01	Fri 02	Sat 03
				High Tide 7.69 ft		Moonrise
				01:21	High Tide 7.45 ft	00:31
				Sunrise	02:00	High Tide 7.05 ft
				06:59	Sunrise	02:42
				Moonset	06:57	Sunrise
				08:04	Moonset	06:56
				Low Tide -1.02 ft	08:45	Moonset
				08:07	Low Tide -0.83 ft	09:33
				High Tide 5.99 ft	08:55	Low Tide -0.46 ft
				14:32	High Tide 5.57 ft	09:46
				Sunset	15:27	High Tide 5.17 ft
				19:42	Sunset	16:26
				Low Tide 1.89 ft	19:43	Sunset
				19:57	Low Tide 2.41 ft	19:44
				Moonrise	20:40	Low Tide 2.87 ft
				23:26		21:28

Sun 04	Mon 05	Tue 06	Wed 07	Thu 08	Fri 09	Sat 10
Moonrise	Moonrise	Last Quarter	Low Tide 3.37 ft	Low Tide 3.04 ft	Low Tide 2.54 ft	Low Tide 1.97 ft
01:28	02:17	02:38	01:04	02:19	03:17	04:03
High Tide 6.55 ft	High Tide 6.04 ft	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
03:27	04:20	02:57	03:30	03:58	04:23	04:46
Sunrise	Sunrise	High Tide 5.61 ft	High Tide 5.34 ft	Sunrise	Sunrise	Sunrise
06:54	06:52	05:26	06:42	06:47	06:46	06:44
Moonset	Moonset	Sunrise	Sunrise	High Tide 5.27 ft	High Tide 5.33 ft	High Tide 5.44 ft
10:27	11:26	06:51	06:49	07:57	09:02	09:55
Low Tide -0.02 ft	Low Tide 0.38 ft	Moonset	Moonset	Moonset	Moonset	Low Tide 1.05 ft
10:42	11:45	12:26	13:28	14:29	15:29	16:12
High Tide 4.87 ft	High Tide 4.75 ft	Low Tide 0.67 ft	Low Tide 0.82 ft	Low Tide 0.89 ft	Low Tide 0.95 ft	Moonset
17:34	18:49	12:52	13:55	14:50	15:34	16:29
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
19:45	19:46	19:47	19:48	19:49	19:51	19:52
Low Tide 3.24 ft	Low Tide 3.44 ft	High Tide 4.82 ft	High Tide 5.02 ft	High Tide 5.27 ft	High Tide 5.56 ft	High Tide 5.87 ft
22:25	23:38	19:59	20:54	21:33	22:05	22:33

5un 11	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16	Sat 17
Low Tide 1.37 ft	Low Tide 0.79 ft	Moonrise	New Moon	High Tide 6.86 ft	High Tide 6.97 ft	High Tide 6.99 ft
04:43	05:19	05:53	05:31	00:20	00:50	01:24
Moonrise	Moonrise	Low Tide 0.26 ft	Moonrise	Sunrise	Sunrise	Sunrise
05:08	05:30	05:54	06:19	06:36	06:34	06:33
Sunrise	Sunrise	Sunrise	Low Tide -0.18 ft	Moonrise	Moonrise	Moonrise
06:42	06:41	06:39	06:29	06:49	07:25	08:09
High Tide 5.55 ft	High Tide 5.63 ft	High Tide 5.66 ft	Sunrise	Low Tide -0.52 ft	Low Tide -0.73 ft	Low Tide -0.82 ft
10:43	11:26	12:08	06:38	07:06	07:44	08:27
Low Tide 1.18 ft	Low Tide 1.36 ft	Low Tide 1.58 ft	High Tide 5.65 ft	High Tide 5.56 ft	High Tide 5.42 ft	High Tide 5.23 ft
16:45	17:17	17:48	12:49	13:32	14:16	15:05
Moonset	Moonset	Moonset	Low Tide 1.84 ft	Low Tide 2.12 ft	Low Tide 2.41 ft	Sunset
17:30	18:31	19:35	18:19	18:51	19:26	19:59
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Low Tide 2.70 ft
19:53	19:54	19:55	19:56	19:57	19:58	20:04
High Tide 6.17 ft	High Tide 6.45 ft	High Tide 6.69 ft	Moonset	Moonset	Moonset	Moonset
22:59	23:25	23:51	20:40	21:47	22:54	23:57

Sun 18	Mon 19	Tue 20	Wed 21	Thu 22	Fri 23	Sat 24
High Tide 6.91 ft	Moonset	Moonset	Moonset	Low Tide 2.97 ft	Low Tide 2.38 ft	Low Tide 1.53 ft
02:02	00:55	01:44	02:26	00:25	01:47	02:56
Sunrise	High Tide 6.74 ft	High Tide 6.45 ft	High Tide 6.11 ft	Moonset	Moonset	Moonset
06:31	02:47	03:41	04:48	03:01	03:32	04:00
Moonrise	Sunrise	Sunrise	Sunrise	High Tide 5.81 ft	Sunrise	Sunrise
09:02	06:30	06:28	06:27	06:07	06:24	06:22

EXHIBIT

MT-04

Low Tide −0.77 ft	Moonrise	Low Tide −0.43 ft	First Quarter	Sunrise	High Tide 5.65 ft	High Tide 5.66 ft
09:14	10:04	11:05	11:20	06:25	07:31	08:49
High Tide 5.04 ft	Low Tide −0.63 ft	Moonrise	Low Tide −0.22 ft	Low Tide −0.02 ft	Low Tide 0.19 ft	Low Tide 0.45 ft
15:59	10:06	11:13	12:08	13:11	14:10	15:04
Sunset	High Tide 4.93 ft	High Tide 4.97 ft	Moonrise	Moonrise	Moonrise	Moonrise
20:00	17:01	18:07	12:26	13:40	14:55	16:09
Low Tide 2.96 ft	Sunset	Sunset	High Tide 5.20 ft	High Tide 5.58 ft	Sunset	Sunset
20:49	20:02	20:03	19:09	20:04	20:06	20:07
	Low Tide 3.16 ft	Low Tide 3.21 ft	Sunset	Sunset	High Tide 6.06 ft	High Tide 6.57 ft
	21:45	22:58	20:04	20:05	20:50	21:32

Sun 25	Mon 26	Tue 27	Wed 28	Thu 29	Fri 30
Low Tide 0.59 ft	Low Tide −0.28 ft	Moonset	Full Moon	[redacted]	[redacted]
03:54	04:46	05:24	05:18	00:08	00:47
Moonset	Moonset	Low Tide −0.98 ft	Moonset	Sunrise	Sunrise
04:27	04:54	05:34	05:58	06:15	06:14
Sunrise	Sunrise	Sunrise	Sunrise	Moonset	Moonset
06:21	06:19	06:18	06:17	06:37	07:23
High Tide 5.75 ft	High Tide 5.85 ft	High Tide 5.90 ft	Low Tide −1.42 ft	Low Tide −1.60 ft	Low Tide −1.52 ft
09:58	10:59	11:55	06:19	07:04	07:48
Low Tide 0.75 ft	Low Tide 1.09 ft	Low Tide 1.46 ft	High Tide 5.88 ft	High Tide 5.77 ft	High Tide 5.60 ft
15:54	16:40	17:24	12:48	13:38	14:28
Moonrise	Moonrise	Moonrise	Low Tide 1.82 ft	Low Tide 2.16 ft	Low Tide 2.49 ft
17:23	18:37	19:50	18:07	18:50	19:34
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
20:08	20:09	20:10	20:11	20:12	20:14
High Tide 7.03 ft	High Tide 7.38 ft	[redacted]	Moonrise	Moonrise	Moonrise
22:12	22:51	23:29	21:03	22:12	23:14

EXHIBIT

MT-04

Crescent City, California

May 2010

Sun 02	Mon 03	Tue 04	Wed 05	Thu 06	Fri 07	Sat 08
						Sat 01
						High Tide 7.10 ft
						01:27
						Sunrise
						06:13
						Moonset
						08:15
						Low Tide -1.24 ft
						08:33
						High Tide 5.39 ft
						15:19
						Sunset
						20:15
						Low Tide 2.78 ft
						20:19
Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 3.03 ft	Low Tide 2.63 ft	Low Tide 2.06 ft
00:07	00:52	01:28	01:58	00:32	01:44	02:43
High Tide 6.68 ft	High Tide 6.20 ft	High Tide 5.70 ft	High Tide 5.23 ft	Moonrise	Moonrise	Moonrise
02:09	02:54	03:44	04:43	02:25	02:48	03:10
Sunrise	Sunrise	Sunrise	Sunrise	High Tide 4.84 ft	Sunrise	Sunrise
06:11	06:10	06:09	06:08	05:54	06:05	06:04
Moonset	Low Tide -0.37 ft	Low Tide 0.10 ft	Low Tide 0.52 ft	Sunrise	High Tide 4.62 ft	High Tide 4.57 ft
09:13	10:08	11:00	11:54	06:06	07:11	08:24
Low Tide -0.83 ft	Moonset	Moonset	Moonset	Low Tide 0.87 ft	Low Tide 1.18 ft	Low Tide 1.45 ft
09:19	10:14	11:16	12:17	12:48	13:40	14:27
High Tide 5.18 ft	High Tide 5.02 ft	High Tide 4.97 ft	High Tide 5.04 ft	Moonset	Moonset	Moonset
16:11	17:07	18:05	19:00	13:18	14:18	15:18
Sunset	Sunset	Sunset	Sunset	High Tide 5.20 ft	Sunset	Sunset
20:16	20:17	20:18	20:19	19:47	20:21	20:22
Low Tide 3.02 ft	Low Tide 3.18 ft	Low Tide 3.21 ft	Last Quarter	Sunset	High Tide 5.45 ft	High Tide 5.74 ft
21:09	22:06	23:15	21:15	20:20	20:26	21:01

Sun 09	Mon 10	Tue 11	Wed 12	Thu 13	Fri 14	Sat 15
				Moonrise		
Low Tide 1.40 ft	Moonrise	Moonrise	Moonrise	05:23		High Tide 7.24 ft
03:32	03:55	04:20	04:48	Sunrise	Sunrise	00:19
Moonrise	Low Tide 0.73 ft	Low Tide 0.08 ft	Low Tide -0.50 ft	05:58	05:57	Sunrise
03:32	04:14	04:52	05:30	Low Tide -0.98 ft	Moonrise	05:56
Sunrise	Sunrise	Sunrise	Sunrise	06:08	06:04	Moonrise
06:03	06:02	06:01	05:59	High Tide 5.28 ft	Low Tide -1.34 ft	06:55
High Tide 4.65 ft	High Tide 4.81 ft	High Tide 4.98 ft	High Tide 5.15 ft	12:43	06:47	Low Tide -1.55 ft
09:28	10:23	11:13	11:58	Low Tide 2.47 ft	High Tide 5.36 ft	07:29
Low Tide 1.69 ft	Low Tide 1.91 ft	Low Tide 2.12 ft	Low Tide 2.31 ft	17:44	13:28	High Tide 5.39 ft
15:10	15:50	16:28	17:06	New Moon	Low Tide 2.62 ft	14:13
Moonset	Moonset	Moonset	Moonset	18:05	18:24	Low Tide 2.75 ft
16:18	17:21	18:26	19:33	Sunset	Sunset	19:07
Sunset	Sunset	Sunset	Sunset	20:27	20:28	Sunset
20:23	20:24	20:25	20:26	Moonset	Moonset	20:29
High Tide 6.06 ft	High Tide 6.37 ft	High Tide 6.67 ft	High Tide 6.93 ft	20:41	21:47	Moonset
21:32	22:03	22:34	23:07	High Tide 7.12 ft		22:48
				23:42		

Sun 16	Mon 17	Tue 18	Wed 19	Thu 20	Fri 21	Sat 22
High Tide 7.24 ft	High Tide 7.11 ft	Moonset	Moonset	Moonset	Low Tide 2.23 ft	Low Tide 1.52 ft
01:00	01:45	00:26	01:03	01:35	00:24	01:40
Sunrise	Sunrise	High Tide 6.81 ft	High Tide 6.36 ft	High Tide 5.82 ft	Moonset	Moonset
05:55	05:54	02:35	03:33	04:40	02:03	02:30
Moonrise	Low Tide -1.48 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
07:56	09:00	05:54	05:53	05:52	05:51	05:50

EXHIBIT

MT-05

Low Tide -1.59 ft	Moonrise	Low Tide -1.21 ft	Low Tide -0.81 ft	Low Tide -0.31 ft	High Tide 5.31 ft	High Tide 4.98 ft
08:13	09:05	09:49	10:41	11:36	05:59	07:24
High Tide 5.38 ft	High Tide 5.39 ft	Moonrise	Moonrise	Moonrise	Low Tide 0.24 ft	Low Tide 0.80 ft
15:02	15:52	10:17	11:32	12:45	12:32	13:28
Low Tide 2.86 ft	Sunset	High Tide 5.47 ft	High Tide 5.63 ft	First Quarter	Moonrise	Moonrise
19:53	20:31	16:45	17:38	16:43	13:58	15:10
Sunset	Low Tide 2.93 ft	Sunset	Sunset	High Tide 5.91 ft	High Tide 6.26 ft	High Tide 6.64 ft
20:30	20:47	20:32	20:33	18:30	19:20	20:07
Moonset		Low Tide 2.90 ft	Low Tide 2.70 ft	Sunset	Sunset	Sunset
23:41		21:51	23:05	20:34	20:35	20:36

Sun 23	Mon 24	Tue 25	Wed 26	Thu 27	Fri 28	Sat 29
				Moonset		
Low Tide 0.68 ft	Moonset	Moonset	Moonset	05:14		High Tide 7.20 ft
02:47	03:24	03:56	04:32	Sunrise	Sunrise	00:22
Moonset	Low Tide -0.15 ft	Low Tide -0.85 ft	Low Tide -1.34 ft	05:47	05:46	Sunrise
02:56	03:44	04:36	05:23	Low Tide -1.60 ft	Moonset	05:46
Sunrise	Sunrise	Sunrise	Sunrise	06:08	06:04	Moonset
05:49	05:49	05:48	05:47	High Tide 5.43 ft	Low Tide -1.64 ft	06:59
High Tide 4.89 ft	High Tide 4.98 ft	High Tide 5.15 ft	High Tide 5.31 ft	12:49	06:50	Low Tide -1.51 ft
08:46	09:59	11:03	11:58	Full Moon	High Tide 5.48 ft	07:32
Low Tide 1.32 ft	Low Tide 1.77 ft	Low Tide 2.14 ft	Low Tide 2.41 ft	16:07	13:36	High Tide 5.47 ft
14:23	15:17	16:08	16:58	Low Tide 2.61 ft	Low Tide 2.76 ft	14:20
Moonrise	Moonrise	Moonrise	Moonrise	17:45	18:31	Low Tide 2.87 ft
16:22	17:34	18:46	19:55	Sunset	Sunset	19:16
Sunset	Sunset	Sunset	Sunset	20:41	20:41	Sunset
20:37	20:38	20:39	20:40	Moonrise	Moonrise	20:42
High Tide 7.00 ft	High Tide 7.27 ft	High Tide 7.44 ft	High Tide 7.48 ft	20:59	21:56	Moonrise
20:51	21:35	22:17	22:59	High Tide 7.39 ft		22:45
				23:40		

Sun 30	Mon 31
High Tide 6.92 ft	High Tide 6.56 ft
01:03	01:44
Sunrise	Sunrise
05:45	05:44
Moonset	Low Tide -0.89 ft
08:00	08:53
Low Tide -1.25 ft	Moonset
08:13	09:02
High Tide 5.42 ft	High Tide 5.36 ft
15:04	15:47
Low Tide 2.97 ft	Sunset
20:01	20:44
Sunset	Low Tide 3.04 ft
20:43	20:49
Moonrise	Moonrise
23:25	23:58

EXHIBIT

MT-05

Crescent City, California

June 2010

		Tue 01	Wed 02	Thu 03	Fri 04	Sat 05
			Moonrise	Moonrise	Moonrise	Low Tide 2.34 ft
		High Tide 6.14 ft	00:26	00:50	01:13	00:57
		02:26	High Tide 5.66 ft	High Tide 5.16 ft	High Tide 4.67 ft	Moonrise
		Sunrise	03:13	04:05	05:07	01:35
		05:44	Sunrise	Sunrise	Sunrise	Sunrise
		Low Tide -0.46 ft	05:43	05:43	05:43	05:42
		09:34	Low Tide 0.01 ft	Low Tide 0.51 ft	Low Tide 1.01 ft	High Tide 4.29 ft
		Moonset	10:15	10:57	11:40	06:21
		10:05	Moonset	Moonset	Moonset	Low Tide 1.50 ft
		High Tide 5.33 ft	11:06	12:06	13:05	12:25
		16:31	High Tide 5.35 ft	High Tide 5.43 ft	Last Quarter	Moonset
		Sunset	17:14	17:56	15:14	14:05
		20:45	Sunset	Sunset	High Tide 5.58 ft	High Tide 5.79 ft
		Low Tide 3.05 ft	20:45	20:46	18:37	19:16
		21:42	Low Tide 2.97 ft	Low Tide 2.74 ft	Sunset	Sunset
			22:43	23:49	20:47	20:47

Sun 06	Mon 07	Tue 08	Wed 09	Thu 10	Fri 11	Sat 12
						New Moon
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	04:15
01:56	02:20	02:47	03:18	03:56	04:44	Sunrise
Low Tide 1.78 ft	Low Tide 1.13 ft	Low Tide 0.45 ft	Low Tide -0.22 ft	Low Tide -0.83 ft	Sunrise	05:41
01:59	02:53	03:41	04:24	05:06	05:41	Moonrise
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide -1.34 ft	05:42
05:42	05:42	05:41	05:41	05:41	05:48	Low Tide -1.71 ft
High Tide 4.11 ft	High Tide 4.16 ft	High Tide 4.36 ft	High Tide 4.65 ft	High Tide 4.94 ft	High Tide 5.21 ft	06:30
07:41	08:57	10:03	10:59	11:48	12:33	High Tide 5.43 ft
Low Tide 1.95 ft	Low Tide 2.32 ft	Low Tide 2.61 ft	Low Tide 2.80 ft	Low Tide 2.90 ft	Low Tide 2.92 ft	13:17
13:12	14:01	14:51	15:40	16:28	17:16	Low Tide 2.88 ft
Moonset	Moonset	Moonset	Moonset	Moonset	Moonset	18:04
15:06	16:09	17:15	18:22	19:30	20:34	Sunset
High Tide 6.05 ft	High Tide 6.34 ft	Sunset	Sunset	Sunset	Sunset	20:51
19:53	20:31	20:49	20:50	20:50	20:51	Moonset
Sunset	Sunset	High Tide 6.65 ft	High Tide 6.96 ft	High Tide 7.26 ft	High Tide 7.50 ft	21:32
20:48	20:49	21:10	21:50	22:31	23:14	High Tide 7.64 ft
						23:59

Sun 13	Mon 14	Tue 15	Wed 16	Thu 17	Fri 18	Sat 19
	High Tide 7.63 ft	High Tide 7.41 ft		Moonset	Moonset	Low Tide 1.48 ft
Sunrise	00:46	01:36	High Tide 6.97 ft	00:06	00:34	00:11
05:41	Sunrise	Sunrise	02:29	High Tide 6.35 ft	High Tide 5.65 ft	Moonset
Moonrise	05:41	05:41	Sunrise	03:28	04:35	01:00
06:49	Low Tide -1.92 ft	Low Tide -1.70 ft	05:41	Sunrise	Sunrise	Sunrise
Low Tide -1.92 ft	07:57	08:42	Low Tide -1.27 ft	05:41	05:41	05:41
07:13	Moonrise	Moonrise	09:27	Low Tide -0.65 ft	Low Tide 0.09 ft	High Tide 5.00 ft
High Tide 5.63 ft	08:03	09:19	Moonrise	10:14	11:02	05:53
14:01	High Tide 5.81 ft	High Tide 6.00 ft	10:35	Moonrise	Moonrise	Low Tide 0.88 ft
Low Tide 2.81 ft	14:45	15:29	High Tide 6.20 ft	11:49	13:01	11:53
18:54	Low Tide 2.70 ft	Low Tide 2.54 ft	16:14	High Tide 6.43 ft	High Tide 6.67 ft	Moonrise
Sunset	19:46	20:44	Sunset	17:01	17:48	14:13
20:52	Sunset	Sunset	20:53	Sunset	Sunset	High Tide 6.89 ft
Moonset	20:52	20:53	Low Tide 2.31 ft	20:53	20:54	18:37
22:21	Moonset	Moonset	21:48	Low Tide 1.97 ft	First Quarter	Sunset
	23:02	23:36		22:57	21:30	20:54

Sun 20	Mon 21	Tue 22	Wed 23	Thu 24	Fri 25	Sat 26
Low Tide 0.87 ft	Moonset	Moonset	Moonset	Moonset	Moonset	Full Moon
01:24	01:57	02:31	03:10	03:57	04:50	04:31
Moonset	Low Tide 0.22 ft	Low Tide -0.38 ft	Low Tide -0.84 ft	Low Tide -1.13 ft	Sunrise	Sunrise
01:27	02:32	03:32	04:25	05:13	05:43	05:43

EXHIBIT

MT-06

Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide -1.27 ft	Moonset
05:41	05:42	05:42	05:42	05:42	05:56	05:48
High Tide 4.59 ft	High Tide 4.51 ft	High Tide 4.66 ft	High Tide 4.92 ft	High Tide 5.17 ft	High Tide 5.35 ft	Low Tide -1.26 ft
07:19	08:46	10:04	11:07	11:59	12:44	06:37
Low Tide 1.63 ft	Low Tide 2.25 ft	Low Tide 2.69 ft	Low Tide 2.94 ft	Low Tide 3.04 ft	Low Tide 3.05 ft	High Tide 5.48 ft
12:47	13:46	14:47	15:46	16:41	17:31	13:24
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 3.02 ft
15:24	16:35	17:44	18:49	19:48	20:39	18:16
High Tide 7.08 ft	High Tide 7.22 ft	Sunset	Sunset	Sunset	Sunset	Sunset
19:26	20:16	20:55	20:55	20:55	20:55	20:55
Sunset	Sunset	High Tide 7.31 ft	High Tide 7.34 ft	High Tide 7.31 ft	High Tide 7.24 ft	Moonrise
20:54	20:54	21:05	21:53	22:39	23:23	21:22

Sun 27	Mon 28	Tue 29	Wed 30
High Tide 7.10 ft	High Tide 6.90 ft	High Tide 6.61 ft	High Tide 6.24 ft
00:05	00:45	01:24	02:05
Sunrise	Sunrise	Sunrise	Sunrise
05:43	05:44	05:44	05:45
Moonset	Low Tide -0.93 ft	Low Tide -0.62 ft	Low Tide -0.22 ft
06:50	07:50	08:25	08:59
Low Tide -1.15 ft	Moonset	Moonset	Moonset
07:14	07:52	08:54	09:55
High Tide 5.57 ft	High Tide 5.62 ft	High Tide 5.67 ft	High Tide 5.72 ft
14:02	14:37	15:11	15:45
Low Tide 2.97 ft	Low Tide 2.91 ft	Low Tide 2.84 ft	Sunset
19:00	19:43	20:27	20:55
Sunset	Sunset	Sunset	Low Tide 2.75 ft
20:55	20:55	20:55	21:14
Moonrise	Moonrise	Moonrise	Moonrise
21:57	22:27	22:53	23:16

EXHIBIT

MT-06

Crescent City, California

July 2010

Thu 01	Fri 02	Sat 03
High Tide 5.78 ft	High Tide 5.26 ft	
02:47	03:34	
Sunrise	Sunrise	High Tide 4.73 ft
05:45	05:46	04:29
Low Tide 0.25 ft	Low Tide 0.79 ft	Sunrise
09:32	10:05	05:46
Moonset	Moonset	Low Tide 1.36 ft
10:55	11:54	10:40
High Tide 5.79 ft	High Tide 5.88 ft	Moonset
16:19	16:52	12:54
Sunset	Sunset	High Tide 6.00 ft
20:55	20:55	17:28
Low Tide 2.61 ft	Low Tide 2.39 ft	Sunset
22:05	23:02	20:54
Moonrise	Moonrise	
23:38	23:59	

Sun 04	Mon 05	Tue 06	Wed 07	Thu 08	Fri 09	Sat 10
Low Tide 2.07 ft						
00:04	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
Moonrise	00:46	01:15	01:49	02:32	03:24	04:27
00:22	Low Tide 1.63 ft	Low Tide 1.08 ft	Low Tide 0.45 ft	Low Tide −0.20 ft	Low Tide −0.81 ft	Low Tide −1.33 ft
High Tide 4.28 ft	01:08	02:09	03:05	03:56	04:42	05:28
05:37	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
Sunrise	05:47	05:48	05:49	05:49	05:50	05:51
05:47	High Tide 4.01 ft	High Tide 4.02 ft	High Tide 4.27 ft	High Tide 4.62 ft	High Tide 5.00 ft	High Tide 5.38 ft
Last Quarter	06:59	08:27	09:43	10:42	11:31	12:13
07:36	Low Tide 2.45 ft	Low Tide 2.88 ft	Low Tide 3.16 ft	Low Tide 3.27 ft	Low Tide 3.21 ft	Low Tide 3.02 ft
Low Tide 1.93 ft	12:02	12:57	13:59	15:02	16:01	16:56
11:18	Moonset	Moonset	Moonset	Moonset	Moonset	Moonset
Moonset	14:58	16:03	17:10	18:16	19:17	20:11
13:55	High Tide 6.33 ft	High Tide 6.56 ft	High Tide 6.86 ft	Sunset	Sunset	Sunset
High Tide 6.14 ft	18:49	19:35	20:25	20:53	20:52	20:52
18:07	Sunset	Sunset	Sunset	High Tide 7.21 ft	High Tide 7.56 ft	High Tide 7.85 ft
Sunset	20:54	20:54	20:53	21:16	22:06	22:57
20:54						

Sun 11	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16	Sat 17
Moonrise						
05:40		High Tide 7.93 ft	High Tide 7.61 ft	High Tide 7.06 ft	High Tide 6.34 ft	
Sunrise	Sunrise	00:38	01:29	02:24	03:23	High Tide 5.56 ft
05:52	05:52	Sunrise	Sunrise	Sunrise	Sunrise	04:30
Low Tide −1.69 ft	Low Tide −1.84 ft	05:53	05:54	05:55	05:56	Sunrise
06:11	06:54	Low Tide −1.73 ft	Low Tide −1.36 ft	Low Tide −0.75 ft	Low Tide 0.02 ft	05:56
New Moon	Moonrise	07:36	08:18	09:00	09:43	Low Tide 0.89 ft
12:41	06:57	Moonrise	Moonrise	Moonrise	Moonrise	10:28
High Tide 5.74 ft	High Tide 6.09 ft	08:15	09:33	10:48	12:02	Moonrise
12:54	13:34	High Tide 6.42 ft	High Tide 6.71 ft	High Tide 6.95 ft	High Tide 7.13 ft	13:15
Low Tide 2.74 ft	Low Tide 2.42 ft	14:13	14:54	15:35	16:19	High Tide 7.21 ft
17:49	18:42	Low Tide 2.08 ft	Low Tide 1.75 ft	Sunset	Sunset	17:05
Sunset	Sunset	19:37	20:34	20:49	20:49	Sunset
20:51	20:51	Sunset	Sunset	Low Tide 1.44 ft	Low Tide 1.14 ft	20:48
Moonset	Moonset	20:50	20:50	21:34	22:39	Low Tide 0.84 ft
20:56	21:34	Moonset	Moonset	Moonset	Moonset	23:49
High Tide 7.99 ft		22:07	22:36	23:04	23:31	
23:47						

Sun 18	Mon 19	Tue 20	Wed 21	Thu 22	Fri 23	Sat 24
Moonset	Moonset	Moonset	Moonset	Moonset	Moonset	Moonset
00:00	00:33	01:10	01:54	02:44	03:40	04:41

EXHIBIT

MT-07

First Quarter	Low Tide 0.51 ft	Low Tide 0.16 ft	Low Tide −0.17 ft	Low Tide −0.44 ft	Low Tide −0.61 ft	Low Tide −0.69 ft
03:11	01:01	02:12	03:16	04:12	04:59	05:41
High Tide 4.91 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
05:47	05:58	05:59	06:00	06:01	06:02	06:03
Sunrise	High Tide 4.53 ft	High Tide 4.52 ft	High Tide 4.75 ft	High Tide 5.04 ft	High Tide 5.30 ft	High Tide 5.50 ft
05:57	07:16	08:47	10:04	11:03	11:48	12:26
Low Tide 1.74 ft	Low Tide 2.48 ft	Low Tide 3.02 ft	Low Tide 3.29 ft	Low Tide 3.33 ft	Low Tide 3.23 ft	Low Tide 3.06 ft
11:18	12:14	13:21	14:32	15:38	16:34	17:21
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
14:26	15:36	16:42	17:42	18:35	19:20	19:58
High Tide 7.21 ft	High Tide 7.16 ft	High Tide 7.10 ft	Sunset	Sunset	Sunset	Sunset
17:55	18:49	19:47	20:45	20:44	20:43	20:42
Sunset	Sunset	Sunset	High Tide 7.08 ft	High Tide 7.08 ft	High Tide 7.09 ft	High Tide 7.08 ft
20:47	20:46	20:46	20:45	21:39	22:29	23:12

Sun 25	**Mon 26**	**Tue 27**	**Wed 28**	**Thu 29**	**Fri 30**	**Sat 31**
Moonset						
05:42		High Tide 6.87 ft	High Tide 6.63 ft	High Tide 6.29 ft	High Tide 5.86 ft	High Tide 5.38 ft
Sunrise	Sunrise	00:31	01:09	01:47	02:27	03:11
06:04	06:05	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
Low Tide −0.67 ft	Moonset	06:06	06:06	06:07	06:08	06:09
06:18	06:44	Low Tide −0.36 ft	Low Tide −0.06 ft	Low Tide 0.34 ft	Low Tide 0.82 ft	Low Tide 1.35 ft
High Tide 5.67 ft	Low Tide −0.56 ft	07:22	07:52	08:21	08:50	09:18
12:58	06:51	Moonset	Moonset	Moonset	Moonset	Moonset
Low Tide 2.87 ft	High Tide 5.81 ft	07:46	08:45	09:45	10:44	11:44
18:03	13:28	High Tide 5.93 ft	High Tide 6.04 ft	High Tide 6.13 ft	High Tide 6.20 ft	High Tide 6.26 ft
Full Moon	Low Tide 2.69 ft	13:57	14:25	14:52	15:21	15:51
18:37	18:43	Low Tide 2.50 ft	Low Tide 2.33 ft	Sunset	Sunset	Sunset
Moonrise	Sunset	19:22	20:01	20:37	20:36	20:35
20:29	20:40	Sunset	Sunset	Low Tide 2.17 ft	Low Tide 2.02 ft	Low Tide 1.87 ft
Sunset	Moonrise	20:39	20:38	20:42	21:26	22:16
20:41	20:57	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
High Tide 7.02 ft		21:21	21:43	22:04	22:26	22:49
23:53						

EXHIBIT

MT-07

Crescent City, California

August 2010

Sun 01	Mon 02	Tue 03	Wed 04	Thu 05	Fri 06	Sat 07
High Tide 4.88 ft	High Tide 4.44 ft		Moonrise	Moonrise	Moonrise	Moonrise
04:02	05:06	Low Tide 1.42 ft	00:24	01:11	02:07	03:14
Sunrise	Sunrise	00:16	Low Tide 1.03 ft	Low Tide 0.52 ft	Low Tide -0.06 ft	Low Tide -0.61 ft
06:10	06:11	Sunrise	01:24	02:29	03:26	04:17
Low Tide 1.91 ft	Low Tide 2.45 ft	06:12	Sunrise	Sunrise	Sunrise	Sunrise
09:49	10:24	High Tide 4.16 ft	06:13	06:14	06:15	06:16
Moonset	Moonset	06:28	High Tide 4.16 ft	High Tide 4.43 ft	High Tide 4.83 ft	High Tide 5.28 ft
12:45	13:49	Low Tide 2.95 ft	08:01	09:21	10:18	11:02
High Tide 6.31 ft	High Tide 6.37 ft	11:08	Low Tide 3.34 ft	Low Tide 3.53 ft	Low Tide 3.45 ft	Low Tide 3.14 ft
16:24	17:03	Moonset	12:10	13:27	14:42	15:47
Sunset	Sunset	14:53	Moonset	Moonset	Moonset	Moonset
20:34	20:33	High Tide 6.46 ft	15:58	17:00	17:57	18:46
Low Tide 1.68 ft	Last Quarter	17:51	High Tide 6.62 ft	High Tide 6.89 ft	Sunset	Sunset
23:12	22:00	Sunset	18:48	19:51	20:28	20:27
Moonrise	Moonrise	20:31	Sunset	Sunset	High Tide 7.25 ft	High Tide 7.61 ft
23:16	23:47		20:31	20:29	20:52	21:50

Sun 08	Mon 09	Tue 10	Wed 11	Thu 12	Fri 13	Sat 14
	Low Tide -1.30 ft					
Moonrise	05:47		High Tide 7.90 ft	High Tide 7.53 ft	High Tide 6.95 ft	High Tide 6.24 ft
04:29	Moonrise	Sunrise	00:31	01:24	02:19	03:18
Low Tide -1.06 ft	05:47	06:20	Sunrise	Sunrise	Sunrise	Sunrise
05:03	Sunrise	Low Tide -1.30 ft	06:21	06:22	06:23	06:24
Sunrise	06:18	06:28	Low Tide -1.03 ft	Low Tide -0.52 ft	Low Tide 0.18 ft	Low Tide 0.99 ft
06:17	High Tide 6.23 ft	Moonrise	07:09	07:50	08:30	09:12
High Tide 5.75 ft	12:19	07:07	Moonrise	Moonrise	Moonrise	Moonrise
11:41	Low Tide 2.12 ft	High Tide 6.68 ft	08:25	09:43	10:58	12:13
Low Tide 2.67 ft	17:38	12:56	High Tide 7.08 ft	High Tide 7.38 ft	High Tide 7.54 ft	High Tide 7.53 ft
16:45	Moonset	Low Tide 1.55 ft	13:34	14:12	14:52	15:35
Moonset	20:03	18:31	Low Tide 1.05 ft	Low Tide 0.67 ft	Sunset	Sunset
19:28	New Moon	Sunset	19:24	20:18	20:19	20:17
Sunset	20:08	20:23	Sunset	Sunset	Low Tide 0.44 ft	Low Tide 0.35 ft
20:26	Sunset	Moonset	20:22	20:20	21:15	22:15
High Tide 7.92 ft	20:24	20:35	Moonset	Moonset	Moonset	Moonset
22:45	High Tide 8.03 ft		21:04	21:32	22:02	22:34
	23:38					

Sun 15	Mon 16	Tue 17	Wed 18	Thu 19	Fri 20	Sat 21
High Tide 5.54 ft	High Tide 4.98 ft		Moonset	Moonset	Moonset	Moonset
04:24	05:41	Low Tide 0.39 ft	00:41	01:36	02:34	03:35
Sunrise	Sunrise	00:33	Low Tide 0.34 ft	Low Tide 0.23 ft	Low Tide 0.10 ft	Low Tide 0.01 ft
06:25	06:26	Sunrise	01:47	02:54	03:51	04:37
Low Tide 1.81 ft	Low Tide 2.56 ft	06:27	Sunrise	Sunrise	Sunrise	Sunrise
09:57	10:49	High Tide 4.72 ft	06:28	06:29	06:30	06:31
Moonrise	First Quarter	07:10	High Tide 4.78 ft	High Tide 5.02 ft	High Tide 5.29 ft	High Tide 5.53 ft
13:25	11:14	Low Tide 3.15 ft	08:39	09:49	10:40	11:19
High Tide 7.38 ft	Moonrise	11:53	Low Tide 3.47 ft	Low Tide 3.49 ft	Low Tide 3.29 ft	Low Tide 2.99 ft
16:22	14:34	Moonrise	13:12	14:31	15:36	16:27
Sunset	High Tide 7.12 ft	15:37	Moonrise	Moonrise	Moonrise	Moonrise
20:16	17:15	High Tide 6.86 ft	16:32	17:19	17:59	18:32
Moonset	Sunset	18:16	High Tide 6.68 ft	Sunset	Sunset	Sunset
23:11	20:14	Sunset	19:24	20:10	20:09	20:07
Low Tide 0.36 ft	Moonset	20:13	Sunset	High Tide 6.64 ft	High Tide 6.69 ft	High Tide 6.77 ft
23:21	23:53		20:12	20:31	21:29	22:19

Sun 22	Mon 23	Tue 24	Wed 25	Thu 26	Fri 27	Sat 28
Moonset	Moonset	Low Tide 0.18 ft	High Tide 6.67 ft	High Tide 6.47 ft	High Tide 6.19 ft	High Tide 5.83 ft
04:37	05:38	06:20	00:19	00:56	01:34	02:13
Low Tide -0.02 ft	Low Tide 0.04 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
05:16	05:50	06:34	06:35	06:36	06:37	06:38

EXHIBIT

MT-08

Sunrise 06:32 High Tide 5.75 ft 11:50 Low Tide 2.67 ft 17:10 Moonrise 19:01 Sunset 20:06 High Tide 6.81 ft 23:02	Sunrise 06:33 High Tide 5.94 ft 12:18 Low Tide 2.35 ft 17:48 Moonrise 19:26 Sunset 20:04 High Tide 6.78 ft 23:42	Moonset 06:38 Full Moon 10:05 High Tide 6.12 ft 12:44 Low Tide 2.04 ft 18:24 Moonrise 19:48 Sunset 20:02	Low Tide 0.41 ft 06:48 Moonset 07:38 High Tide 6.28 ft 13:08 Low Tide 1.76 ft 18:59 Sunset 20:01 Moonrise 20:10	Low Tide 0.73 ft 07:15 Moonset 08:37 High Tide 6.41 ft 13:33 Low Tide 1.52 ft 19:35 Sunset 19:59 Moonrise 20:32	Low Tide 1.13 ft 07:42 Moonset 09:36 High Tide 6.50 ft 13:58 Sunset 19:58 Low Tide 1.34 ft 20:12 Moonrise 20:55	Low Tide 1.58 ft 08:09 Moonset 10:37 High Tide 6.55 ft 14:25 Sunset 19:56 Low Tide 1.22 ft 20:52 Moonrise 21:20

Sun 29	**Mon 30**	**Tue 31**
High Tide 5.43 ft 02:57 Sunrise 06:39 Low Tide 2.06 ft 08:38 Moonset 11:39 High Tide 6.55 ft 14:54 Sunset 19:54 Low Tide 1.15 ft 21:37 Moonrise 21:49	High Tide 5.02 ft 03:47 Sunrise 06:40 Low Tide 2.54 ft 09:09 Moonset 12:42 High Tide 6.52 ft 15:28 Sunset 19:53 Moonrise 22:23 Low Tide 1.11 ft 22:29	High Tide 4.65 ft 04:50 Sunrise 06:41 Low Tide 3.00 ft 09:45 Moonset 13:45 High Tide 6.47 ft 16:10 Sunset 19:51 Moonrise 23:05 Low Tide 1.04 ft 23:32

EXHIBIT

MT-08

Crescent City, California

September 2010

			Wed 01	Thu 02	Fri 03	Sat 04
			High Tide 4.43 ft		Moonrise	Moonrise
			06:10	Low Tide 0.85 ft	00:56	02:04
			Sunrise	00:43	Low Tide 0.51 ft	Low Tide 0.10 ft
			06:42	Sunrise	01:52	02:54
			Last Quarter	06:43	Sunrise	Sunrise
			10:23	High Tide 4.49 ft	06:44	06:45
			Low Tide 3.40 ft	07:40	High Tide 4.79 ft	High Tide 5.23 ft
			10:36	Low Tide 3.66 ft	08:52	09:44
			Moonset	11:49	Low Tide 3.64 ft	Low Tide 3.27 ft
			14:47	Moonset	13:18	14:36
			High Tide 6.45 ft	15:44	Moonset	Moonset
			17:04	High Tide 6.50 ft	16:35	17:19
			Sunset	18:12	High Tide 6.69 ft	Sunset
			19:49	Sunset	19:26	19:44
			Moonrise	19:48	Sunset	High Tide 7.01 ft
			23:55		19:46	20:36
Sun 05	**Mon 06**	**Tue 07**	**Wed 08**	**Thu 09**	**Fri 10**	**Sat 11**
Moonrise	Low Tide -0.52 ft	Low Tide -0.55 ft	New Moon	High Tide 7.49 ft	High Tide 7.16 ft	High Tide 6.67 ft
03:19	04:33	05:16	03:30	00:26	01:20	02:15
Low Tide -0.28 ft	Moonrise	Moonrise	Low Tide -0.36 ft	Low Tide 0.04 ft	Sunrise	Sunrise
03:46	04:37	05:56	05:57	06:38	06:51	06:52
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide 0.61 ft	Low Tide 1.27 ft
06:46	06:47	06:48	06:49	06:50	07:19	08:00
High Tide 5.75 ft	High Tide 6.30 ft	High Tide 6.84 ft	Moonrise	Moonrise	Moonrise	Moonrise
10:25	11:02	11:38	07:15	08:33	09:50	11:05
Low Tide 2.65 ft	Low Tide 1.90 ft	Low Tide 1.11 ft	High Tide 7.33 ft	High Tide 7.69 ft	High Tide 7.88 ft	High Tide 7.85 ft
15:40	16:36	17:28	12:14	12:51	13:30	14:10
Moonset	Moonset	Moonset	Low Tide 0.40 ft	Low Tide -0.13 ft	Sunset	Sunset
17:57	18:30	19:01	18:18	19:09	19:34	19:33
Sunset	Sunset	Sunset	Moonset	Sunset	Low Tide -0.42 ft	Low Tide -0.46 ft
19:43	19:41	19:39	19:30	19:36	19:59	20:52
High Tide 7.34 ft	High Tide 7.57 ft	High Tide 7.64 ft	Sunset	Moonset	Moonset	Moonset
21:39	22:37	23:32	19:38	20:00	20:32	21:08
Sun 12	**Mon 13**	**Tue 14**	**Wed 15**	**Thu 16**	**Fri 17**	**Sat 18**
		High Tide 5.18 ft				
High Tide 6.11 ft	High Tide 5.58 ft	05:32		Moonset	Moonset	Moonset
03:13	04:18	Sunrise		00:28	01:29	02:30
Sunrise	Sunrise	06:55	High Tide 5.01 ft	Low Tide 0.57 ft	Low Tide 0.64 ft	Low Tide 0.65 ft
06:53	06:54	Low Tide 3.18 ft	06:56	01:12	02:20	03:16
Low Tide 1.97 ft	Low Tide 2.63 ft	10:28	Sunrise	Sunrise	Sunrise	Sunrise
08:43	09:31	Moonrise	06:56	06:58	06:59	07:00
Moonrise	Moonrise	14:25	Low Tide 3.54 ft	High Tide 5.10 ft	High Tide 5.32 ft	High Tide 5.57 ft
12:18	13:26	High Tide 6.77 ft	11:42	08:15	09:16	10:01
High Tide 7.62 ft	High Tide 7.24 ft	16:37	Moonrise	Low Tide 3.60 ft	Low Tide 3.37 ft	Low Tide 2.97 ft
14:53	15:41	Sunset	15:16	13:09	14:27	15:27
Sunset	Sunset	19:27	High Tide 6.36 ft	Moonrise	Moonrise	Moonrise
19:31	19:29	First Quarter	17:44	15:59	16:34	17:04
Low Tide -0.28 ft	Moonset	22:49	Sunset	High Tide 6.12 ft	Sunset	Sunset
21:49	22:37	Moonset	19:26	19:00	19:22	19:20
Moonset	Low Tide 0.04 ft	23:30		Sunset	High Tide 6.08 ft	High Tide 6.15 ft
21:49	22:50	Low Tide 0.36 ft		19:24	20:13	21:14
		23:59				
Sun 19	**Mon 20**	**Tue 21**	**Wed 22**	**Thu 23**	**Fri 24**	**Sat 25**
Moonset	Moonset	Low Tide 0.86 ft	Low Tide 1.06 ft	High Tide 6.29 ft	High Tide 6.17 ft	High Tide 5.99 ft
03:31	04:31	05:12	05:41	00:08	00:46	01:25
Low Tide 0.66 ft	Low Tide 0.73 ft	Moonset	Moonset	Full Moon	Low Tide 1.63 ft	Low Tide 1.99 ft
04:02	04:39	05:31	06:30	02:18	06:37	07:05

EXHIBIT

MT-09

Sunrise 07:01 High Tide 5.81 ft 10:35 Low Tide 2.52 ft 16:14 Moonrise 17:30 Sunset 19:19 High Tide 6.26 ft 22:05	Sunrise 07:02 High Tide 6.05 ft 11:04 Low Tide 2.06 ft 16:53 Moonrise 17:53 Sunset 19:17 High Tide 6.33 ft 22:49	Sunrise 07:03 High Tide 6.28 ft 11:29 Low Tide 1.61 ft 17:29 Moonrise 18:16 Sunset 19:15 High Tide 6.34 ft 23:29	Sunrise 07:04 High Tide 6.49 ft 11:54 Low Tide 1.20 ft 18:03 Moonrise 18:38 Sunset 19:13	Low Tide 1.32 ft 06:09 Sunrise 07:05 Moonset 07:30 High Tide 6.67 ft 12:17 Low Tide 0.85 ft 18:36 Moonrise 19:00 Sunset 19:12	Sunrise 07:06 Moonset 08:30 High Tide 6.80 ft 12:42 Sunset 19:10 Low Tide 0.58 ft 19:10 Moonrise 19:25	Sunrise 07:07 Moonset 09:32 High Tide 6.87 ft 13:08 Sunset 19:08 Low Tide 0.42 ft 19:46 Moonrise 19:53

Sun 26	**Mon 27**	**Tue 28**	**Wed 29**	**Thu 30**
High Tide 5.75 ft 02:06 Sunrise 07:08 Low Tide 2.37 ft 07:34 Moonset 10:34 High Tide 6.87 ft 13:36 Sunset 19:06 Low Tide 0.35 ft 20:25 Moonrise 20:25	High Tide 5.46 ft 02:51 Sunrise 07:09 Low Tide 2.76 ft 08:05 Moonset 11:37 High Tide 6.81 ft 14:07 Sunset 19:05 Moonrise 21:04 Low Tide 0.37 ft 21:08	High Tide 5.17 ft 03:42 Sunrise 07:10 Low Tide 3.14 ft 08:40 Moonset 12:39 High Tide 6.71 ft 14:44 Sunset 19:03 Moonrise 21:51 Low Tide 0.45 ft 21:59	High Tide 4.93 ft 04:45 Sunrise 07:11 Low Tide 3.48 ft 09:24 Moonset 13:36 High Tide 6.56 ft 15:30 Sunset 19:01 Moonrise 22:47 Low Tide 0.52 ft 22:59	High Tide 4.85 ft 05:59 Sunrise 07:12 Low Tide 3.73 ft 10:26 Moonset 14:28 High Tide 6.38 ft 16:31 Sunset 18:59 Last Quarter 20:53 Moonrise 23:50

EXHIBIT

MT-09

Crescent City, California

October 2010

Fri 01	Sat 02
	Moonrise
Low Tide 0.53 ft	01:00
00:06	Low Tide 0.45 ft
Sunrise	01:14
07:13	Sunrise
High Tide 4.99 ft	07:14
07:14	High Tide 5.34 ft
Low Tide 3.76 ft	08:15
11:51	Low Tide 3.43 ft
Moonset	13:20
15:13	Moonset
High Tide 6.27 ft	15:52
17:46	Sunset
Sunset	18:56
18:58	High Tide 6.31 ft
	19:09

Sun 03	Mon 04	Tue 05	Wed 06	Thu 07	Fri 08	Sat 09
Moonrise	Low Tide 0.26 ft	Low Tide 0.31 ft	Low Tide 0.51 ft	Low Tide 0.84 ft	High Tide 6.88 ft	High Tide 6.68 ft
02:14	03:09	03:57	04:42	05:24	00:24	01:18
Low Tide 0.33 ft	Moonrise	Moonrise	Moonrise	Sunrise	Low Tide 1.28 ft	Low Tide 1.77 ft
02:15	03:30	04:46	06:03	07:20	06:07	06:49
Sunrise	Sunrise	Sunrise	Sunrise	Moonrise	Sunrise	Sunrise
07:15	07:17	07:18	07:19	07:21	07:21	07:22
High Tide 5.82 ft	High Tide 6.38 ft	High Tide 6.96 ft	High Tide 7.49 ft	High Tide 7.91 ft	Moonrise	Moonrise
09:02	09:42	10:20	10:57	11:34	08:39	09:54
Low Tide 2.76 ft	Low Tide 1.87 ft	Low Tide 0.92 ft	Low Tide 0.04 ft	New Moon	High Tide 8.14 ft	High Tide 8.15 ft
14:34	15:34	16:28	17:17	11:44	12:12	12:51
Moonset	Moonset	Moonset	Moonset	Low Tide -0.65 ft	Sunset	Sunset
16:26	16:57	17:26	17:56	18:06	18:46	18:44
Sunset	Sunset	Sunset	Sunset	Moonset	Low Tide -1.08 ft	Low Tide -1.20 ft
18:54	18:53	18:51	18:49	18:27	18:53	19:41
High Tide 6.49 ft	High Tide 6.71 ft	High Tide 6.89 ft	High Tide 6.95 ft	Sunset	Moonset	Moonset
20:25	21:32	22:33	23:29	18:48	19:02	19:41

Sun 10	Mon 11	Tue 12	Wed 13	Thu 14	Fri 15	Sat 16
High Tide 6.39 ft	High Tide 6.03 ft	High Tide 5.70 ft	High Tide 5.45 ft		Moonset	Moonset
02:12	03:08	04:08	05:16	High Tide 5.37 ft	00:21	01:23
Sunrise	Sunrise	Sunrise	Sunrise	06:27	Low Tide 0.74 ft	Low Tide 1.01 ft
07:23	07:24	07:25	07:26	Sunrise	00:26	01:29
Low Tide 2.28 ft	Low Tide 2.77 ft	Low Tide 3.21 ft	Low Tide 3.54 ft	07:27	Sunrise	Sunrise
07:32	08:18	09:10	10:12	Low Tide 3.69 ft	07:29	07:30
Moonrise	Moonrise	Moonrise	Moonrise	11:29	High Tide 5.45 ft	High Tide 5.64 ft
11:06	12:11	13:08	13:54	First Quarter	07:34	08:28
High Tide 7.94 ft	High Tide 7.54 ft	High Tide 7.02 ft	High Tide 6.45 ft	14:26	Low Tide 3.56 ft	Low Tide 3.17 ft
13:32	14:16	15:04	16:00	Moonrise	12:55	14:10
Sunset	Sunset	Sunset	Sunset	14:33	Moonrise	Moonrise
18:43	18:41	18:39	18:38	High Tide 5.94 ft	15:05	15:32
Moonset	Moonset	Moonset	Moonset	17:08	High Tide 5.60 ft	Sunset
20:27	21:20	22:18	23:19	Sunset	18:26	18:33
Low Tide -1.03 ft	Low Tide -0.65 ft	Low Tide -0.15 ft	Low Tide 0.34 ft	18:36	Sunset	High Tide 5.48 ft
20:31	21:23	22:19	23:21		18:35	19:43

Sun 17	Mon 18	Tue 19	Wed 20	Thu 21	Fri 22	Sat 23
Moonset	Low Tide 1.38 ft	Low Tide 1.57 ft	Low Tide 1.78 ft	Low Tide 2.01 ft	Low Tide 2.26 ft	High Tide 5.88 ft
02:23	03:11	03:50	04:25	04:57	05:28	00:39
Low Tide 1.21 ft	Moonset	Moonset	Moonset	Moonset	Moonset	Low Tide 2.52 ft
02:25	03:23	04:22	05:21	06:21	07:23	05:59
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
07:31	07:32	07:33	07:34	07:35	07:37	07:38

EXHIBIT

MT - 10

High Tide 5.88 ft	High Tide 6.14 ft	High Tide 6.40 ft	High Tide 6.66 ft	High Tide 6.89 ft	High Tide 7.08 ft	Moonset
09:09	09:42	10:11	10:37	11:03	11:30	08:26
Low Tide 2.64 ft	Low Tide 2.06 ft	Low Tide 1.48 ft	Moonrise	Moonrise	Moonrise	High Tide 7.21 ft
15:07	15:52	16:31	17:04	17:29	17:56	11:57
Moonrise	Moonrise	Moonrise	Low Tide 0.93 ft	Low Tide 0.45 ft	Low Tide 0.07 ft	Sunset
15:57	16:20	16:42	17:06	17:41	18:14	18:23
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Moonrise
18:32	18:30	18:29	18:27	18:26	18:24	18:27
High Tide 5.52 ft	High Tide 5.62 ft	High Tide 5.73 ft	High Tide 5.81 ft	High Tide 5.87 ft	Full Moon	Low Tide −0.21 ft
20:49	21:45	22:33	23:17	23:58	18:38	18:49

Sun 24	Mon 25	Tue 26	Wed 27	Thu 28	Fri 29	Sat 30
High Tide 5.83 ft	High Tide 5.73 ft	High Tide 5.60 ft	High Tide 5.47 ft	High Tide 5.40 ft		Moonrise
01:20	02:02	02:49	03:40	04:38	High Tide 5.46 ft	00:02
Low Tide 2.79 ft	Low Tide 3.05 ft	Sunrise	Sunrise	Sunrise	05:39	Last Quarter
06:31	07:05	07:41	07:43	07:44	Sunrise	05:46
Sunrise	Sunrise	Low Tide 3.31 ft	Low Tide 3.55 ft	Low Tide 3.73 ft	07:45	High Tide 5.69 ft
07:39	07:40	07:42	08:26	09:20	Low Tide 3.78 ft	06:39
Moonset	Moonset	Moonset	Moonset	Moonset	10:31	Sunrise
09:30	10:32	11:31	12:24	13:11	Moonset	07:46
High Tide 7.26 ft	High Tide 7.25 ft	High Tide 7.16 ft	High Tide 6.98 ft	High Tide 6.70 ft	13:51	Low Tide 3.54 ft
12:27	12:59	13:35	14:17	15:08	High Tide 6.35 ft	11:56
Sunset	Sunset	Sunset	Sunset	Sunset	16:11	Moonset
18:21	18:20	18:18	18:17	18:16	Sunset	14:25
Moonrise	Moonrise	Moonrise	Low Tide −0.18 ft	Low Tide 0.03 ft	18:14	High Tide 6.02 ft
19:05	19:50	20:43	21:38	22:33	Low Tide 0.26 ft	17:29
Low Tide −0.36 ft	Low Tide −0.40 ft	Low Tide −0.34 ft	Moonrise	Moonrise	23:32	Sunset
19:26	20:06	20:49	21:44	22:51		18:13

Sun 31
Low Tide 0.51 ft
00:34
Moonrise
01:14
High Tide 6.07 ft
07:31
Sunrise
07:47
Low Tide 2.94 ft
13:18
Moonset
14:57
Sunset
18:12
High Tide 5.83 ft
18:55

EXHIBIT

MT-10

Crescent City, California

November 2010

Mon 01	Tue 02	Wed 03	Thu 04	Fri 05	Sat 06
Low Tide 0.77 ft	Low Tide 1.05 ft	Low Tide 1.38 ft	Low Tide 1.73 ft	Low Tide 2.08 ft	High Tide 6.36 ft
01:33	02:28	03:19	04:07	04:53	00:25
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 2.42 ft
02:27	03:41	04:56	06:12	07:27	05:39
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
07:49	07:50	07:51	07:52	07:54	07:55
High Tide 6.56 ft	High Tide 7.09 ft	High Tide 7.60 ft	High Tide 8.01 ft	High Tide 8.28 ft	Moonrise
08:17	08:59	09:39	10:19	10:59	08:42
Low Tide 2.06 ft	Low Tide 1.06 ft	Low Tide 0.09 ft	Moonset	Moonset	High Tide 8.11 ft
14:28	15:27	16:19	16:55	17:32	11:39
Moonset	Moonset	Moonset	Low Tide -0.71 ft	Low Tide -1.25 ft	Sunset
15:25	15:54	16:23	17:08	17:54	18:05
Sunset	Sunset	Sunset	Sunset	Sunset	Moonset
18:11	18:09	18:08	18:07	18:06	18:16
High Tide 5.84 ft	High Tide 5.97 ft	High Tide 6.15 ft	High Tide 6.29 ft	New Moon	Low Tide -1.50 ft
20:16	21:28	22:32	23:31	21:52	18:40

Sun 07	Mon 08	Tue 09	Wed 10	Thu 11	Fri 12	Sat 13
High Tide 6.33 ft	High Tide 6.23 ft	High Tide 6.08 ft	High Tide 5.92 ft	High Tide 5.80 ft	High Tide 5.76 ft	High Tide 5.83 ft
01:17	01:08	02:00	02:53	03:48	04:45	05:39
Low Tide 2.74 ft	Low Tide 3.04 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
05:24	06:11	06:58	07:00	07:01	07:02	07:03
Sunrise	Sunrise	Low Tide 3.30 ft	Low Tide 3.53 ft	Low Tide 3.68 ft	Low Tide 3.68 ft	First Quarter
06:56	06:57	06:59	07:52	08:53	10:04	08:37
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 3.47 ft
08:51	09:53	10:45	11:28	12:03	12:33	11:22
High Tide 6.22 ft	High Tide 7.51 ft	High Tide 7.46 ft	High Tide 6.92 ft	High Tide 6.33 ft	High Tide 5.76 ft	Moonrise
11:21	12:03	12:47	13:34	14:26	15:26	12:59
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	High Tide 5.29 ft
17:03	17:02	17:01	17:00	16:59	16:58	16:38
Moonset	Moonset	Low Tide -0.75 ft	Low Tide -0.21 ft	Low Tide 0.34 ft	Low Tide 0.87 ft	Sunset
18:06	19:03	19:58	20:47	21:39	22:31	16:57
Low Tide -1.47 ft	Low Tide -1.19 ft	Moonset	Moonset	Moonset	Moonset	Low Tide 1.34 ft
18:26	19:12	20:04	21:08	22:11	23:12	23:25

Sun 14	Mon 15	Tue 16	Wed 17	Thu 18	Fri 19	Sat 20
	Low Tide 1.75 ft	Low Tide 2.11 ft	Low Tide 2.43 ft	Low Tide 2.69 ft	Low Tide 2.92 ft	Low Tide 3.10 ft
Moonset	00:17	01:06	01:50	02:31	03:10	03:48
00:12	Moonset	Moonset	Moonset	Moonset	Moonset	Moonset
High Tide 5.99 ft	01:12	02:11	03:10	04:11	05:14	06:18
06:27	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
Sunrise	07:06	07:07	07:08	07:09	07:11	07:12
07:04	High Tide 6.20 ft	High Tide 6.45 ft	High Tide 6.72 ft	High Tide 6.99 ft	High Tide 7.24 ft	High Tide 7.45 ft
Low Tide 3.04 ft	07:07	07:42	08:14	08:45	09:16	09:48
12:35	Low Tide 2.45 ft	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
Moonrise	13:35	14:07	14:31	14:57	15:27	16:02
13:22	Moonrise	Low Tide 1.80 ft	Low Tide 1.15 ft	Low Tide 0.55 ft	Low Tide 0.02 ft	Sunset
Sunset	13:45	14:23	15:04	15:42	16:18	16:52
16:57	Sunset	Sunset	Sunset	Sunset	Sunset	Low Tide -0.40 ft
High Tide 5.00 ft	16:56	16:55	16:54	16:53	16:52	16:54
17:58	High Tide 4.93 ft	High Tide 5.01 ft	High Tide 5.18 ft	High Tide 5.38 ft	High Tide 5.57 ft	High Tide 5.72 ft
	19:14	20:21	21:17	22:06	22:50	23:33

Sun 21	Mon 22	Tue 23	Wed 24	Thu 25	Fri 26	Sat 27
Low Tide 3.25 ft	High Tide 5.82 ft	High Tide 5.89 ft	High Tide 5.92 ft	High Tide 5.97 ft	High Tide 6.06 ft	High Tide 6.24 ft
04:26	00:15	00:57	01:42	02:28	03:17	04:06
Sunrise	Low Tide 3.37 ft	Low Tide 3.48 ft	Low Tide 3.57 ft	Sunrise	Sunrise	Sunrise
07:13	05:05	05:45	06:30	07:17	07:19	07:20
Moonset	Sunrise	Sunrise	Sunrise	Low Tide 3.62 ft	Low Tide 3.59 ft	Low Tide 3.41 ft
07:22	07:14	07:15	07:16	07:20	08:20	09:31

EXHIBIT

MT-11

Full Moon	Moonset	Moonset	Moonset	Moonset	Moonset	Moonset
09:29	08:23	09:20	10:09	10:51	11:27	11:59
High Tide 7.61 ft	High Tide 7.71 ft	High Tide 7.71 ft	High Tide 7.59 ft	High Tide 7.32 ft	High Tide 6.89 ft	High Tide 6.35 ft
10:22	10:58	11:36	12:18	13:05	13:59	15:02
Moonrise	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
16:45	16:50	16:50	16:49	16:49	16:48	16:48
Sunset	Moonrise	Moonrise	Low Tide -0.85 ft	Low Tide -0.62 ft	Low Tide -0.24 ft	Low Tide 0.26 ft
16:51	17:37	18:37	19:34	20:19	21:08	21:58
Low Tide -0.71 ft	Low Tide -0.89 ft	Low Tide -0.95 ft	Moonrise	Moonrise	Moonrise	Moonrise
17:31	18:10	18:51	19:43	20:54	22:05	23:17

Sun 28	**Mon 29**	**Tue 30**
High Tide 6.51 ft	Moonrise	
04:56	00:29	Moonrise
Sunrise	High Tide 6.86 ft	01:42
07:21	05:45	High Tide 7.26 ft
Low Tide 2.98 ft	Sunrise	06:32
10:49	07:22	Sunrise
Moonset	Low Tide 2.28 ft	07:23
12:28	12:07	Low Tide 1.39 ft
Last Quarter	Moonset	13:16
12:37	12:56	Moonset
High Tide 5.79 ft	Sunset	13:23
16:18	16:47	Sunset
Sunset	High Tide 5.39 ft	16:47
16:47	17:44	High Tide 5.27 ft
Low Tide 0.84 ft	Low Tide 1.44 ft	19:12
22:52	23:48	

EXHIBIT

MT-11

Crescent City, California

December 2010

Wed 01	Thu 02	Fri 03	Sat 04
Low Tide 2.00 ft	Low Tide 2.48 ft	Low Tide 2.84 ft	Low Tide 3.09 ft
00:45	01:42	02:37	03:30
Moonrise	Moonrise	Moonrise	Moonrise
02:54	04:08	05:21	06:31
High Tide 7.66 ft	Sunrise	Sunrise	Sunrise
07:18	07:25	07:26	07:27
Sunrise	High Tide 7.99 ft	High Tide 8.23 ft	High Tide 8.34 ft
07:24	08:04	08:48	09:33
Moonset	Moonset	Moonset	Moonset
13:53	14:27	15:07	15:53
Low Tide 0.48 ft	Low Tide −0.33 ft	Low Tide −0.93 ft	Low Tide −1.29 ft
14:16	15:10	15:59	16:45
Sunset	Sunset	Sunset	Sunset
16:46	16:46	16:46	16:46
High Tide 5.39 ft	High Tide 5.63 ft	High Tide 5.88 ft	High Tide 6.08 ft
20:31	21:38	22:36	23:28

Sun 05	Mon 06	Tue 07	Wed 08	Thu 09	Fri 10	Sat 11
Low Tide 3.25 ft	High Tide 6.19 ft	High Tide 6.24 ft	High Tide 6.23 ft	High Tide 6.20 ft	High Tide 6.17 ft	High Tide 6.18 ft
04:20	00:15	01:00	01:44	02:27	03:10	03:52
Sunrise	Low Tide 3.35 ft	Low Tide 3.42 ft	Low Tide 3.49 ft	Sunrise	Sunrise	Sunrise
07:28	05:09	05:56	06:44	07:32	07:33	07:33
Moonrise	Sunrise	Sunrise	Sunrise	Low Tide 3.54 ft	Low Tide 3.55 ft	Low Tide 3.48 ft
07:36	07:29	07:30	07:31	07:33	08:27	09:27
New Moon	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
09:37	08:33	09:20	10:00	10:32	11:00	11:24
High Tide 8.31 ft	High Tide 8.14 ft	High Tide 7.85 ft	High Tide 7.44 ft	High Tide 6.95 ft	High Tide 6.39 ft	High Tide 5.79 ft
10:17	11:01	11:44	12:27	13:10	13:56	14:47
5unset	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
16:46	16:46	16:45	16:45	16:45	16:46	16:46
Moonset	Moonset	Moonset	Low Tide −0.62 ft	Low Tide −0.12 ft	Low Tide 0.43 ft	Low Tide 1.02 ft
16:47	17:47	18:50	19:35	20:15	20:55	21:35
Low Tide −1.40 ft	Low Tide −1.29 ft	Low Tide −1.02 ft	Moonset	Moonset	Moonset	Moonset
17:29	18:12	18:53	19:55	20:58	22:00	22:59

Sun 12	Mon 13	Tue 14	Wed 15	Thu 16	Fri 17	Sat 18
High Tide 6.23 ft	High Tide 6.33 ft	Moonset		Low Tide 3.14 ft	Low Tide 3.44 ft	Low Tide 3.61 ft
04:35	05:16	00:58	Moonset	00:40	01:33	02:25
Sunrise	First Quarter	High Tide 6.48 ft	01:57	Moonset	Moonset	Moonset
07:34	05:59	05:56	High Tide 6.67 ft	02:59	04:02	05:06
Low Tide 3.28 ft	Sunrise	Sunrise	06:35	High Tide 6.91 ft	Sunrise	Sunrise
10:33	07:35	07:36	Sunrise	07:15	07:38	07:38
Moonrise	Low Tide 2.90 ft	Moonrise	07:36	Sunrise	High Tide 7.16 ft	High Tide 7.44 ft
11:47	11:43	12:32	Moonrise	07:37	07:54	08:35
High Tide 5.22 ft	Moonrise	Low Tide 2.37 ft	12:57	Moonrise	Moonrise	Moonrise
15:48	12:09	12:48	Low Tide 1.75 ft	13:25	13:58	14:37
Sunset	Sunset	Sunset	13:45	Low Tide 1.11 ft	Low Tide 0.49 ft	Low Tide −0.08 ft
16:46	16:46	16:46	Sunset	14:33	15:16	15:56
Low Tide 1.62 ft	High Tide 4.76 ft	High Tide 4.54 ft	16:46	Sunset	Sunset	Sunset
22:17	17:03	18:29	High Tide 4.58 ft	16:47	16:47	16:47
Moonset	Low Tide 2.20 ft	Low Tide 2.72 ft	19:52	High Tide 4.81 ft	High Tide 5.11 ft	High Tide 5.42 ft
23:59	23:01	23:49		21:00	21:55	22:41

Sun 19	Mon 20	Tue 21	Wed 22	Thu 23	Fri 24	Sat 25
Low Tide 3.67 ft	Low Tide 3.66 ft	High Tide 5.95 ft	High Tide 6.18 ft	High Tide 6.39 ft	High Tide 6.59 ft	High Tide 6.81 ft
03:14	04:00	00:02	00:42	01:21	02:02	02:43
Moonset	Moonset	Full Moon	Low Tide 3.47 ft	Low Tide 3.33 ft	Low Tide 3.15 ft	Sunrise
06:09	07:08	00:15	05:33	06:22	07:15	07:42
Sunrise	Sunrise	Low Tide 3.58 ft	Sunrise	Sunrise	Sunrise	Low Tide 2.91 ft
07:39	07:40	04:46	07:41	07:41	07:42	08:14

EXHIBIT

MT-12

High Tide 7.71 ft	High Tide 7.95 ft	Sunrise	Moonset	Moonset	Moonset	Moonset
09:15	09:57	07:40	08:48	09:27	10:01	10:31
Moonrise	Moonrise	Moonset	High Tide 8.13 ft	High Tide 7.97 ft	High Tide 7.60 ft	High Tide 7.02 ft
15:25	16:23	08:02	11:24	12:10	13:00	13:54
Low Tide -0.56 ft	Sunset	High Tide 8.11 ft	Sunset	Sunset	Sunset	Sunset
16:35	16:48	10:40	16:49	16:50	16:50	16:51
Sunset	Low Tide -0.94 ft	Sunset	Low Tide -1.22 ft	Low Tide -1.07 ft	Low Tide -0.70 ft	Low Tide -0.13 ft
16:48	17:15	16:49	18:35	19:16	19:57	20:40
High Tide 5.70 ft		Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
23:23		17:29	18:40	19:53	21:07	22:20
		Low Tide -1.17 ft				
		17:54				

Sun 26	Mon 27	Tue 28	Wed 29	Thu 30	Fri 31
High Tide 7.04 ft	High Tide 7.27 ft	Moonrise		Low Tide 2.87 ft	Low Tide 3.35 ft
03:26	04:11	00:45	Moonrise	00:07	01:13
Sunrise	Sunrise	High Tide 7.49 ft	01:57	Moonrise	Moonrise
07:42	07:43	04:59	High Tide 7.68 ft	03:08	04:18
Low Tide 2.59 ft	Low Tide 2.15 ft	Sunrise	05:49	High Tide 7.84 ft	High Tide 7.96 ft
09:20	10:32	07:43	Sunrise	06:42	07:35
Moonset	Moonset	Low Tide 1.57 ft	07:43	Sunrise	Sunrise
11:00	11:27	11:47	Moonset	07:43	07:43
High Tide 6.30 ft	High Tide 5.59 ft	Moonset	12:28	Moonset	Moonset
14:57	16:11	11:56	Low Tide 0.90 ft	13:05	13:47
Sunset	Sunset	Sunset	12:59	Low Tide 0.24 ft	Low Tide -0.32 ft
16:52	16:52	16:53	Sunset	14:03	15:00
Low Tide 0.60 ft	Last Quarter	High Tide 5.08 ft	16:54	Sunset	Sunset
21:25	20:20	17:38	High Tide 4.92 ft	16:55	16:55
Moonrise	Low Tide 1.41 ft	Low Tide 2.20 ft	19:11	High Tide 5.10 ft	High Tide 5.45 ft
23:33	22:13	23:06		20:37	21:41

EXHIBIT

MT-12

Crescent City, California

January 2009

				Thu 01	Fri 02	Sat 03
				High Tide 6.34 ft	High Tide 6.52 ft	
				02:55	03:28	High Tide 6.73 ft
				Sunrise	Sunrise	04:03
				07:44	07:44	Sunrise
				Low Tide 3.31 ft	Low Tide 3.03 ft	07:44
				08:28	09:24	Low Tide 2.61 ft
				Moonrise	Moonrise	10:28
				10:30	10:52	Moonrise
				High Tide 6.17 ft	High Tide 5.62 ft	11:13
				13:56	14:49	High Tide 5.07 ft
				Sunset	Sunset	15:57
				16:57	16:58	Sunset
				Low Tide 0.80 ft	Low Tide 1.36 ft	16:58
				20:39	21:13	Low Tide 1.98 ft
				Moonset	Moonset	21:52
				22:19	23:24	

Sun 04	Mon 05	Tue 06	Wed 07	Thu 08	Fri 09	Sat 10
Moonset						Low Tide 3.43 ft
00:31	Moonset		Low Tide 3.57 ft	Low Tide 3.73 ft	Low Tide 3.66 ft	04:01
First Quarter	01:41	Moonset	00:44	01:55	03:01	Moonset
03:56	High Tide 7.25 ft	02:55	Moonset	Moonset	Moonset	07:32
High Tide 6.97 ft	05:27	High Tide 7.56 ft	04:12	05:27	06:35	Sunrise
04:42	Sunrise	06:17	High Tide 7.90 ft	Sunrise	Sunrise	07:43
Sunrise	07:44	Sunrise	07:12	07:43	07:43	High Tide 8.78 ft
07:44	Moonrise	07:44	Sunrise	High Tide 8.26 ft	High Tide 8.58 ft	10:01
Low Tide 2.03 ft	12:04	Moonrise	07:43	08:10	09:06	Moonrise
11:36	Low Tide 1.29 ft	12:39	Moonrise	Moonrise	Moonrise	16:47
Moonrise	12:44	Low Tide 0.48 ft	13:22	14:19	15:28	Sunset
11:37	Sunset	13:47	Low Tide -0.32 ft	Low Tide -1.01 ft	Low Tide -1.51 ft	17:05
Sunset	17:00	Sunset	14:45	15:38	16:28	Low Tide -1.76 ft
16:59	High Tide 4.62 ft	17:01	Sunset	Sunset	Sunset	17:15
High Tide 4.69 ft	18:58	High Tide 4.87 ft	17:02	17:03	17:04	Full Moon
17:22	Low Tide 3.17 ft	20:25	High Tide 5.29 ft	High Tide 5.74 ft	High Tide 6.14 ft	19:27
Low Tide 2.61 ft	23:36		21:34	22:29	23:16	High Tide 6.50 ft
22:38						23:59

Sun 11	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16	Sat 17
						Moonrise
	High Tide 6.81 ft	High Tide 7.06 ft	High Tide 7.25 ft	High Tide 7.35 ft		00:12
Low Tide 3.11 ft	00:41	01:22	02:03	02:44	High Tide 7.37 ft	High Tide 7.30 ft
04:58	Low Tide 2.78 ft	Low Tide 2.49 ft	Sunrise	Sunrise	03:25	04:09
Sunrise	05:53	06:49	07:41	07:41	Sunrise	Sunrise
07:42	Sunrise	Sunrise	Low Tide 2.26 ft	Low Tide 2.07 ft	07:40	07:40
Moonset	07:42	07:42	07:45	08:44	Low Tide 1.91 ft	Moonset
08:17	Moonset	Moonset	Moonset	Moonset	09:48	10:56
High Tide 8.78 ft	08:52	09:21	09:46	10:10	Moonset	Low Tide 1.72 ft
10:55	High Tide 8.53 ft	High Tide 8.02 ft	High Tide 7.31 ft	High Tide 6.47 ft	10:32	10:56
Sunset	11:47	12:39	13:33	14:29	High Tide 5.63 ft	High Tide 4.95 ft
17:07	Sunset	Sunset	Sunset	Sunset	15:32	16:48
Low Tide -1.74 ft	17:08	17:09	17:10	17:11	Sunset	Sunset
18:01	Low Tide -1.44 ft	Low Tide -0.89 ft	Low Tide -0.15 ft	Low Tide 0.72 ft	17:12	17:13
Moonrise	18:44	19:26	20:07	20:47	Low Tide 1.62 ft	Last Quarter
18:09	Moonrise	Moonrise	Moonrise	Moonrise	21:28	18:47
	19:28	20:44	21:56	23:05		Low Tide 2.48 ft
						22:12

Sun 18	Mon 19	Tue 20	Wed 21	Thu 22	Fri 23	Sat 24
Moonrise	Moonrise	Low Tide 3.77 ft	Low Tide 4.05 ft	Low Tide 4.09 ft	Low Tide 3.97 ft	Low Tide 3.77 ft
01:18	02:23	00:06	01:18	02:24	03:18	04:02

EXHIBIT

MT - 13

High Tide 7.17 ft	High Tide 7.03 ft	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
04:54	05:44	03:26	04:25	05:20	06:07	06:47
Sunrise	Sunrise	High Tide 6.94 ft	High Tide 6.94 ft	Sunrise	Sunrise	Sunrise
07:39	07:39	06:38	07:32	07:37	07:36	07:35
Moonset	Moonset	Sunrise	Sunrise	High Tide 7.03 ft	High Tide 7.17 ft	High Tide 7.31 ft
11:22	11:52	07:38	07:38	08:24	09:10	09:52
Low Tide 1.48 ft	Low Tide 1.17 ft	Moonset	Moonset	Moonset	Moonset	Moonset
12:08	13:17	12:28	13:10	14:00	14:56	15:57
Sunset	Sunset	Low Tide 0.82 ft	Low Tide 0.49 ft	Low Tide 0.21 ft	Low Tide -0.02 ft	Low Tide -0.19 ft
17:15	17:16	14:18	15:09	15:53	16:31	17:04
High Tide 4.58 ft	High Tide 4.61 ft	Sunset	Sunset	Sunset	Sunset	Sunset
18:20	19:59	17:17	17:18	17:19	17:21	17:22
Low Tide 3.22 ft		High Tide 4.87 ft	High Tide 5.16 ft	High Tide 5.42 ft	High Tide 5.64 ft	High Tide 5.84 ft
23:03		21:18	22:11	22:49	23:21	23:49

Sun 25	**Mon 26**	**Tue 27**	**Wed 28**	**Thu 29**	**Fri 30**	**Sat 31**
Low Tide 3.53 ft	High Tide 6.04 ft	High Tide 6.25 ft	High Tide 6.45 ft	High Tide 6.64 ft	High Tide 6.82 ft	High Tide 6.98 ft
04:42	00:16	00:43	01:09	01:36	02:04	02:34
Moonrise	Low Tide 3.29 ft	Low Tide 3.04 ft	Low Tide 2.79 ft	Low Tide 2.53 ft	Sunrise	Sunrise
07:21	05:20	05:58	06:37	07:19	07:30	07:29
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide 2.25 ft	Low Tide 1.96 ft
07:35	07:34	07:33	07:32	07:31	08:04	08:54
High Tide 7.39 ft	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
10:31	07:49	08:14	08:36	08:57	09:18	09:41
Moonset	High Tide 7.38 ft	High Tide 7.25 ft	High Tide 6.99 ft	High Tide 6.60 ft	High Tide 6.11 ft	High Tide 5.55 ft
17:00	11:08	11:45	12:22	13:02	13:47	14:40
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
17:23	17:24	17:26	17:27	17:28	17:30	17:31
Low Tide -0.26 ft	Moonset	Low Tide -0.09 ft	Low Tide 0.20 ft	Low Tide 0.61 ft	Low Tide 1.15 ft	Low Tide 1.76 ft
17:36	18:04	18:34	19:02	19:31	20:01	20:33
New Moon	Low Tide -0.24 ft	Moonset	Moonset	Moonset	Moonset	Moonset
23:56	18:06	19:08	20:12	21:16	22:22	23:30

EXHIBIT

MT - 13

Crescent City, California

February 2009

Sun 01	Mon 02	Tue 03	Wed 04	Thu 05	Fri 06	Sat 07
	Moonset			Low Tide 3.85 ft	Low Tide 3.78 ft	Low Tide 3.41 ft
	00:41	Moonset		00:23	01:47	02:58
High Tide 7.11 ft	High Tide 7.22 ft	01:55	Moonset	Moonset	Moonset	Moonset
03:08	03:48	High Tide 7.31 ft	03:08	04:17	05:17	06:07
Sunrise	Sunrise	04:39	High Tide 7.43 ft	High Tide 7.62 ft	Sunrise	Sunrise
07:28	07:27	Sunrise	05:40	06:49	07:23	07:22
Low Tide 1.64 ft	Moonrise	07:26	Sunrise	Sunrise	High Tide 7.89 ft	High Tide 8.16 ft
09:52	10:37	Moonrise	07:25	07:24	07:57	08:59
Moonrise	Low Tide 1.28 ft	11:16	Moonrise	Moonrise	Moonrise	Moonrise
10:07	10:59	Low Tide 0.82 ft	12:04	13:05	14:18	15:37
High Tide 5.00 ft	First Quarter	12:12	Low Tide 0.26 ft	Low Tide -0.32 ft	Low Tide -0.83 ft	Low Tide -1.17 ft
15:45	15:12	Sunset	13:24	14:29	15:24	16:13
Sunset	High Tide 4.60 ft	17:35	Sunset	Sunset	Sunset	Sunset
17:32	17:10	High Tide 4.54 ft	17:36	17:37	17:39	17:40
Low Tide 2.42 ft	Sunset	18:51	High Tide 4.83 ft	High Tide 5.28 ft	High Tide 5.76 ft	High Tide 6.23 ft
21:10	17:33	Low Tide 3.57 ft	20:21	21:25	22:13	22:54
	Low Tide 3.05 ft	22:59				
	21:56					

Sun 08	Mon 09	Tue 10	Wed 11	Thu 12	Fri 13	Sat 14
Low Tide 2.90 ft	Low Tide 2.34 ft	High Tide 7.04 ft	High Tide 7.32 ft	High Tide 7.47 ft	High Tide 7.48 ft	
03:59	04:53	00:08	00:44	01:20	01:56	High Tide 7.34 ft
Moonset	Full Moon	Low Tide 1.84 ft	Low Tide 1.44 ft	Sunrise	Sunrise	02:33
06:46	06:49	05:45	06:36	07:15	07:14	Sunrise
Sunrise	Moonset	Sunrise	Sunrise	Low Tide 1.19 ft	Low Tide 1.08 ft	07:13
07:20	07:18	07:18	07:17	07:26	08:17	Low Tide 1.09 ft
High Tide 8.31 ft	Sunrise	Moonset	Moonset	Moonset	Moonset	09:11
09:57	07:19	07:45	08:10	08:33	08:57	Moonset
Moonrise	High Tide 8.26 ft	High Tide 7.98 ft	High Tide 7.49 ft	High Tide 6.83 ft	High Tide 6.11 ft	09:23
16:57	10:51	11:42	12:32	13:22	14:15	High Tide 5.41 ft
Low Tide -1.27 ft	Low Tide -1.12 ft	Sunset	Sunset	Sunset	Sunset	15:13
16:58	17:39	17:44	17:45	17:46	17:47	Sunset
Sunset	Sunset	Low Tide -0.72 ft	Low Tide -0.12 ft	Low Tide 0.61 ft	Low Tide 1.42 ft	17:49
17:41	17:42	18:18	18:56	19:33	20:09	Low Tide 2.21 ft
High Tide 6.67 ft	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	20:45
23:32	18:16	19:31	20:43	21:53	23:02	

Sun 15	Mon 16	Tue 17	Wed 18	Thu 19	Fri 20	Sat 21
	Moonrise			Low Tide 4.07 ft	Low Tide 3.91 ft	Low Tide 3.60 ft
Moonrise	01:14	Moonrise		00:53	02:07	03:01
00:09	High Tide 6.79 ft	02:16	Moonrise	Moonrise	Moonrise	Moonrise
High Tide 7.09 ft	03:55	High Tide 6.51 ft	03:13	04:03	04:45	05:21
03:11	Sunrise	04:47	High Tide 6.33 ft	High Tide 6.33 ft	Sunrise	Sunrise
Sunrise	07:10	Sunrise	05:50	06:58	07:04	07:03
07:11	Moonset	07:09	Sunrise	Sunrise	High Tide 6.47 ft	High Tide 6.68 ft
Moonset	10:26	Moonset	07:07	07:06	08:00	08:51
09:52	Low Tide 1.24 ft	11:06	Moonset	Moonset	Moonset	Moonset
Low Tide 1.17 ft	11:17	Low Tide 1.20 ft	11:53	12:47	13:46	14:48
10:10	Last Quarter	12:30	Low Tide 1.02 ft	Low Tide 0.75 ft	Low Tide 0.48 ft	Low Tide 0.24 ft
High Tide 4.82 ft	13:39	Sunset	13:40	14:37	15:23	16:01
16:23	Sunset	17:52	Sunset	Sunset	Sunset	Sunset
Sunset	17:51	High Tide 4.49 ft	17:54	17:55	17:56	17:57
17:50	High Tide 4.48 ft	19:36	High Tide 4.74 ft	High Tide 5.02 ft	High Tide 5.29 ft	High Tide 5.57 ft
Low Tide 2.94 ft	17:52	Low Tide 3.95 ft	20:54	21:41	22:15	22:42
21:25	Low Tide 3.54 ft	23:25				
	22:14					

Sun 22	Mon 23	Tue 24	Wed 25	Thu 26	Fri 27	Sat 28
Low Tide 3.22 ft	Low Tide 2.79 ft	Low Tide 2.36 ft	Low Tide 1.92 ft	High Tide 6.73 ft	High Tide 6.96 ft	High Tide 7.13 ft
03:45	04:25	05:02	05:40	00:21	00:47	01:15

EXHIBIT

MT - 14

Moonrise	Moonrise	Moonrise	Sunrise	Low Tide 1.51 ft	Sunrise	Sunrise
05:52	06:18	06:41	06:57	06:18	06:54	06:52
Sunrise	Sunrise	Sunrise	Moonrise	Sunrise	Low Tide 1.13 ft	Low Tide 0.83 ft
07:01	07:00	06:58	07:03	06:55	06:58	07:41
High Tide 6.88 ft	High Tide 6.99 ft	High Tide 7.00 ft	High Tide 6.89 ft	Moonrise	Moonrise	Moonrise
09:36	10:17	10:55	11:34	07:24	07:47	08:11
Moonset	Moonset	Low Tide 0.12 ft	Low Tide 0.32 ft	High Tide 6.66 ft	High Tide 6.32 ft	High Tide 5.88 ft
15:52	16:57	17:32	18:00	12:15	12:58	13:45
Low Tide 0.09 ft	Low Tide 0.04 ft	New Moon	Sunset	Sunset	Sunset	Sunset
16:34	17:03	17:36	18:02	18:03	18:05	18:06
Sunset	Sunset	Sunset	Moonset	Low Tide 0.67 ft	Low Tide 1.13 ft	Low Tide 1.67 ft
17:59	18:00	18:01	19:07	18:28	18:58	19:29
High Tide 5.86 ft	High Tide 6.17 ft	Moonset		Moonset	Moonset	Moonset
23:07	23:32	18:02		20:13	21:22	22:32
		High Tide 6.46 ft				
		23:56				

EXHIBIT

MT-14

Crescent City, California

March 2009

Sun 01	Mon 02	Tue 03	Wed 04	Thu 05	Fri 06	Sat 07
		Moonset				
High Tide 7.23 ft		00:58	Moonset		Low Tide 3.67 ft	Low Tide 3.27 ft
01:46	High Tide 7.24 ft	High Tide 7.17 ft	02:07	Moonset	00:30	01:54
Sunrise	02:23	03:09	High Tide 7.05 ft	03:09	Moonset	Moonset
06:51	Sunrise	Sunrise	04:06	High Tide 6.95 ft	04:00	04:42
Low Tide 0.62 ft	06:49	06:47	Sunrise	05:19	High Tide 6.99 ft	Sunrise
08:29	Moonrise	Moonrise	06:46	Sunrise	06:38	06:41
Moonrise	09:16	10:00	Moonrise	06:44	Sunrise	High Tide 7.15 ft
08:41	Low Tide 0.50 ft	Low Tide 0.42 ft	10:56	Moonrise	06:43	07:52
High Tide 5.39 ft	09:25	10:32	Low Tide 0.28 ft	12:02	Moonrise	Moonrise
14:40	High Tide 4.91 ft	High Tide 4.60 ft	11:47	Low Tide 0.03 ft	13:16	14:33
Sunset	15:46	17:11	Sunset	13:02	Low Tide -0.27 ft	Low Tide -0.52 ft
18:07	Sunset	Sunset	18:11	Sunset	14:07	15:02
Low Tide 2.25 ft	18:08	18:09	High Tide 4.62 ft	18:12	Sunset	Sunset
20:03	Low Tide 2.82 ft	Low Tide 3.33 ft	18:46	High Tide 4.95 ft	18:13	18:14
Moonset	20:44	21:37	Low Tide 3.68 ft	20:05	High Tide 5.40 ft	High Tide 5.90 ft
23:45		First Quarter	22:55		21:00	21:43
		23:45				

Sun 08	Mon 09	Tue 10	Wed 11	Thu 12	Fri 13	Sat 14
Low Tide 2.62 ft	Low Tide 1.90 ft	Low Tide 1.22 ft	High Tide 7.17 ft	High Tide 7.37 ft	High Tide 7.40 ft	High Tide 7.28 ft
04:01	04:57	05:47	00:30	01:03	01:35	02:08
Moonset	Moonset	Moonset	Low Tide 0.66 ft	Low Tide 0.27 ft	Sunrise	Sunrise
06:16	06:44	07:10	06:34	07:19	07:31	07:29
Sunrise	Sunrise	Sunrise	Moonset	Sunrise	Low Tide 0.09 ft	Low Tide 0.10 ft
07:39	07:38	07:36	07:34	07:33	08:03	08:48
High Tide 7.32 ft	High Tide 7.39 ft	High Tide 7.31 ft	Sunrise	Moonset	Moonset	Moonset
09:57	10:55	11:48	07:34	07:57	08:23	08:51
Low Tide -0.60 ft	Low Tide -0.50 ft	Low Tide -0.21 ft	High Tide 7.06 ft	High Tide 6.68 ft	High Tide 6.21 ft	High Tide 5.69 ft
16:50	17:32	18:11	12:37	13:26	14:14	15:04
Moonrise	Moonrise	Sunset	Low Tide 0.25 ft	Sunset	Sunset	Sunset
16:51	18:06	19:18	18:48	19:20	19:21	19:22
Sunset	Sunset	Moonrise	Sunset	Low Tide 0.82 ft	Low Tide 1.45 ft	Low Tide 2.08 ft
19:15	19:16	19:19	19:19	19:23	19:58	20:33
High Tide 6.39 ft	High Tide 6.83 ft	Full Moon	Moonrise	Moonrise	Moonrise	Moonrise
23:21	23:56	19:37	20:30	21:40	22:49	23:57

Sun 15	Mon 16	Tue 17	Wed 18	Thu 19	Fri 20	Sat 21
			Moonrise			
	Moonrise	Moonrise	02:55		Low Tide 3.78 ft	Low Tide 3.46 ft
High Tide 7.02 ft	01:01	02:01	High Tide 5.95 ft	Moonrise	01:30	02:44
02:42	High Tide 6.68 ft	High Tide 6.30 ft	04:53	03:41	Moonrise	Moonrise
Sunrise	03:18	04:00	Sunrise	High Tide 5.71 ft	04:19	04:51
07:28	Sunrise	Sunrise	07:22	06:01	High Tide 5.65 ft	Sunrise
Moonset	07:26	07:24	Last Quarter	Sunrise	07:19	07:17
09:23	Moonset	Moonset	10:49	07:21	Sunrise	High Tide 5.76 ft
Low Tide 0.27 ft	10:01	10:46	Moonset	Moonset	07:19	08:28
09:34	Low Tide 0.54 ft	Low Tide 0.82 ft	11:37	12:34	Moonset	Moonset
High Tide 5.18 ft	10:26	11:26	Low Tide 0.99 ft	Low Tide 1.00 ft	13:36	14:39
15:58	High Tide 4.74 ft	High Tide 4.47 ft	12:36	13:47	Low Tide 0.86 ft	Low Tide 0.70 ft
Sunset	17:02	18:21	Sunset	Sunset	14:48	15:36
19:23	Sunset	Sunset	19:27	19:28	Sunset	Sunset
Low Tide 2.68 ft	19:24	19:26	High Tide 4.45 ft	High Tide 4.63 ft	19:29	19:30
21:09	Low Tide 3.19 ft	Low Tide 3.59 ft	19:52	21:04	High Tide 4.90 ft	High Tide 5.21 ft
	21:49	22:40	Low Tide 3.82 ft		21:49	22:21
			23:57			

Sun 22	Mon 23	Tue 24	Wed 25	Thu 26	Fri 27	Sat 28
Low Tide 2.98 ft	Low Tide 2.41 ft	Low Tide 1.80 ft	Low Tide 1.17 ft	High Tide 6.67 ft	High Tide 6.98 ft	High Tide 7.21 ft
03:39	04:23	05:03	05:41	00:04	00:31	01:01

EXHIBIT

MT - 15

Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 0.57 ft	Low Tide 0.04 ft	Sunrise
05:19	05:44	06:06	06:28	06:18	06:57	07:05
Sunrise	Sunrise	Sunrise	Sunrise	Moonrise	Sunrise	Low Tide -0.37 ft
07:16	07:14	07:12	07:11	06:50	07:07	07:38
High Tide 5.95 ft	High Tide 6.13 ft	High Tide 6.26 ft	High Tide 6.32 ft	Sunrise	Moonrise	Moonrise
09:25	10:14	10:59	11:42	07:09	07:15	07:43
Moonset	Moonset	Low Tide 0.55 ft	Low Tide 0.71 ft	New Moon	High Tide 6.16 ft	High Tide 5.93 ft
15:43	16:47	17:21	17:51	09:08	13:10	13:57
Low Tide 0.56 ft	Low Tide 0.51 ft	Moonset	Moonset	High Tide 6.29 ft	Low Tide 1.33 ft	Low Tide 1.76 ft
16:15	16:49	17:52	18:59	12:26	18:54	19:28
Sunset	Sunset	Sunset	Sunset	Low Tide 0.98 ft	Sunset	Sunset
19:31	19:32	19:33	19:35	18:22	19:37	19:38
High Tide 5.56 ft	High Tide 5.93 ft	High Tide 6.31 ft		Sunset	Moonset	Moonset
22:48	23:14	23:38		19:36	21:19	22:33
				Moonset		
				20:08		

Sun 29	**Mon 30**	**Tue 31**
High Tide 7.34 ft		Moonset
01:33	High Tide 7.34 ft	00:59
Sunrise	02:10	High Tide 7.20 ft
07:04	Sunrise	02:53
Moonrise	07:02	Sunrise
08:17	Moonrise	07:00
Low Tide -0.60 ft	08:59	Moonrise
08:22	Low Tide -0.66 ft	09:52
High Tide 5.62 ft	09:12	Low Tide -0.56 ft
14:48	High Tide 5.26 ft	10:08
Sunset	15:45	High Tide 4.95 ft
19:39	Sunset	16:52
Low Tide 2.21 ft	19:40	Sunset
20:05	Low Tide 2.66 ft	19:41
Moonset	20:46	Low Tide 3.06 ft
23:47		21:36

EXHIBIT

MT - 15

Crescent City, California

April 2009

			Wed 01	Thu 02	Fri 03	Sat 04
			Moonset	Moonset	Low Tide 3.39 ft	Low Tide 3.03 ft
			02:03	02:57	00:13	01:44
			High Tide 6.94 ft	High Tide 6.61 ft	Moonset	Moonset
			03:45	04:50	03:41	04:16
			Sunrise	Sunrise	High Tide 6.31 ft	Sunrise
			06:59	06:57	06:09	06:54
			Moonrise	First Quarter	Sunrise	High Tide 6.18 ft
			10:55	07:34	06:55	07:33
			Low Tide -0.38 ft	Moonrise	Moonrise	Moonrise
			11:12	12:06	13:21	14:36
			High Tide 4.81 ft	Low Tide -0.23 ft	Low Tide -0.15 ft	Low Tide -0.10 ft
			18:10	12:23	13:34	14:37
			Sunset	High Tide 4.93 ft	Sunset	Sunset
			19:42	19:28	19:44	19:45
			Low Tide 3.35 ft	Sunset	High Tide 5.26 ft	High Tide 5.70 ft
			22:44	19:43	20:32	21:23
Sun 05	**Mon 06**	**Tue 07**	**Wed 08**	**Thu 09**	**Fri 10**	**Sat 11**
Low Tide 2.36 ft	Low Tide 1.56 ft	Low Tide 0.77 ft	Low Tide 0.10 ft	Low Tide -0.39 ft	High Tide 7.23 ft	High Tide 7.15 ft
02:59	04:00	04:51	05:37	06:20	00:20	00:52
Moonset	Moonset	Moonset	Moonset	Moonset	Sunrise	Sunrise
04:46	05:12	05:36	05:59	06:23	06:44	06:42
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Moonset	Moonset
06:52	06:50	06:49	06:47	06:45	06:50	07:21
High Tide 6.19 ft	High Tide 6.24 ft	High Tide 6.26 ft	High Tide 6.21 ft	Full Moon	Low Tide -0.68 ft	Low Tide -0.75 ft
08:49	09:56	10:54	11:47	07:55	07:01	07:41
Low Tide 0.00 ft	Low Tide 0.20 ft	Low Tide 0.50 ft	Low Tide 0.88 ft	High Tide 6.08 ft	High Tide 5.88 ft	High Tide 5.63 ft
15:31	16:18	17:00	17:38	12:36	13:23	14:09
Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 1.32 ft	Low Tide 1.78 ft	Low Tide 2.22 ft
15:50	17:01	18:12	19:21	18:16	18:51	19:27
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
19:46	19:47	19:49	19:50	19:51	19:52	19:53
High Tide 6.17 ft	High Tide 6.60 ft	High Tide 6.95 ft	High Tide 7.17 ft	Moonrise	Moonrise	Moonrise
22:04	22:41	23:15	23:48	20:30	21:38	22:45
Sun 12	**Mon 13**	**Tue 14**	**Wed 15**	**Thu 16**	**Fri 17**	**Sat 18**
High Tide 6.95 ft		Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 3.39 ft
01:25	High Tide 6.66 ft	00:44	01:33	02:15	02:50	01:01
Sunrise	01:58	High Tide 6.32 ft	High Tide 5.95 ft	High Tide 5.58 ft	High Tide 5.26 ft	Moonrise
06:40	Sunrise	02:35	03:17	04:08	05:13	03:19
Moonset	06:39	Sunrise	Sunrise	Sunrise	Sunrise	High Tide 5.07 ft
07:57	Moonset	06:37	06:36	06:34	06:32	06:30
Low Tide -0.64 ft	08:39	Moonset	Moonset	Moonset	Last Quarter	Sunrise
08:21	Low Tide -0.38 ft	09:28	10:24	11:23	06:38	06:31
High Tide 5.33 ft	09:04	Low Tide -0.05 ft	Low Tide 0.30 ft	Low Tide 0.59 ft	Moonset	Moonset
14:56	High Tide 5.02 ft	09:50	10:42	11:42	12:25	13:28
Sunset	15:47	High Tide 4.75 ft	High Tide 4.57 ft	High Tide 4.56 ft	Low Tide 0.77 ft	Low Tide 0.87 ft
19:54	Sunset	16:44	17:48	18:58	12:44	13:42
Low Tide 2.63 ft	19:55	Sunset	Sunset	Sunset	High Tide 4.72 ft	Sunset
20:03	Low Tide 3.00 ft	19:56	19:57	19:59	19:57	20:01
Moonrise	20:41	Low Tide 3.29 ft	Low Tide 3.51 ft	Low Tide 3.57 ft	Sunset	High Tide 4.99 ft
23:48		21:25	22:20	23:35	20:00	20:41
Sun 19	**Mon 20**	**Tue 21**	**Wed 22**	**Thu 23**	**Fri 24**	**Sat 25**
Low Tide 2.94 ft	Low Tide 2.32 ft	Low Tide 1.59 ft	Low Tide 0.81 ft	Moonrise	Moonrise	Moonrise
02:13	03:09	03:55	04:36	05:15	05:42	06:15
Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 0.04 ft	Low Tide -0.66 ft	Sunrise
03:44	04:07	04:29	04:52	05:16	05:56	06:21
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide -1.22 ft
06:29	06:28	06:26	06:25	06:23	06:22	06:38

EXHIBIT

MT - 16

High Tide 5.03 ft	High Tide 5.13 ft	High Tide 5.28 ft	High Tide 5.46 ft	High Tide 5.61 ft	High Tide 5.71 ft	High Tide 5.73 ft
07:46	08:52	09:49	10:41	11:30	12:19	13:07
Moonset	Low Tide 0.99 ft	Low Tide 1.10 ft	Low Tide 1.27 ft	Low Tide 1.49 ft	Low Tide 1.75 ft	Low Tide 2.04 ft
14:32	15:15	15:54	16:30	17:07	17:44	18:22
Low Tide 0.92 ft	Moonset	Moonset	Moonset	Moonset	Sunset	Sunset
14:32	15:36	16:41	17:48	18:59	20:07	20:08
Sunset	Sunset	Sunset	Sunset	Sunset	Moonset	Moonset
20:02	20:03	20:04	20:05	20:06	20:13	21:29
High Tide 5.33 ft	High Tide 5.73 ft	High Tide 6.15 ft	High Tide 6.58 ft	High Tide 6.97 ft	New Moon	
21:16	21:45	22:14	22:42	23:13	20:24	
					High Tide 7.29 ft	
					23:46	

Sun 26	**Mon 27**	**Tue 28**	**Wed 29**	**Thu 30**
High Tide 7.50 ft	High Tide 7.56 ft		Moonset	Moonset
00:22	01:02	High Tide 7.46 ft	00:52	01:40
Sunrise	Sunrise	01:46	High Tide 7.17 ft	High Tide 6.73 ft
06:19	06:18	Sunrise	02:36	03:34
Moonrise	Moonrise	06:16	Sunrise	Sunrise
06:55	07:45	Moonrise	06:15	06:14
Low Tide −1.57 ft	Low Tide −1.70 ft	08:46	Low Tide −1.34 ft	Low Tide −0.95 ft
07:21	08:08	Low Tide −1.61 ft	09:54	10:54
High Tide 5.65 ft	High Tide 5.51 ft	08:59	Moonrise	Moonrise
13:57	14:50	High Tide 5.34 ft	09:57	11:12
Low Tide 2.33 ft	Low Tide 2.61 ft	15:48	High Tide 5.24 ft	High Tide 5.27 ft
19:03	19:48	Sunset	16:50	17:54
Sunset	Sunset	20:12	Sunset	Sunset
20:09	20:11	Low Tide 2.86 ft	20:13	20:14
Moonset	Moonset	20:40	Low Tide 3.03 ft	Low Tide 3.04 ft
22:44	23:53		21:41	22:57

EXHIBIT

MT - 16

Crescent City, California

May 2009

					Fri 01	Sat 02
					Moonset	Low Tide 2.77 ft
					02:18	00:23
					High Tide 6.20 ft	Moonset
					04:42	02:49
					Sunrise	High Tide 5.71 ft
					06:12	06:02
					Low Tide -0.52 ft	Sunrise
					11:56	06:11
					Moonrise	Low Tide -0.09 ft
					12:27	12:58
					First Quarter	Moonrise
					13:44	13:41
					High Tide 5.47 ft	High Tide 5.79 ft
					18:56	19:51
					Sunset	Sunset
					20:15	20:16

Sun 03	Mon 04	Tue 05	Wed 06	Thu 07	Fri 08	Sat 09
					Moonset	
Low Tide 2.19 ft	Low Tide 1.41 ft	Low Tide 0.61 ft	Moonset	Moonset	05:21	
01:45	02:55	03:52	04:26	04:52	Sunrise	Moonset
Moonset	Moonset	Moonset	Low Tide -0.10 ft	Low Tide -0.64 ft	06:04	05:55
03:16	03:40	04:03	04:41	05:25	Low Tide -0.99 ft	Sunrise
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	06:05	06:02
06:10	06:08	06:07	06:06	06:05	High Tide 5.38 ft	Low Tide -1.14 ft
High Tide 5.38 ft	High Tide 5.25 ft	High Tide 5.25 ft	High Tide 5.30 ft	High Tide 5.36 ft	12:37	06:44
07:26	08:45	09:54	10:55	11:48	Low Tide 2.31 ft	High Tide 5.36 ft
Low Tide 0.34 ft	Low Tide 0.76 ft	Low Tide 1.18 ft	Low Tide 1.59 ft	Low Tide 1.97 ft	17:45	13:22
13:57	14:50	15:39	16:24	17:05	Sunset	Low Tide 2.59 ft
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	20:22	18:23
14:52	16:01	17:09	18:17	19:24	Moonrise	Sunset
Sunset	Sunset	Sunset	Sunset	Sunset	20:31	20:23
20:17	20:18	20:19	20:20	20:21	Full Moon	Moonrise
High Tide 6.17 ft	High Tide 6.53 ft	High Tide 6.83 ft	High Tide 7.02 ft	High Tide 7.09 ft	21:01	21:35
20:39	21:21	21:59	22:34	23:09	High Tide 7.05 ft	
					23:42	

Sun 10	Mon 11	Tue 12	Wed 13	Thu 14	Fri 15	Sat 16
High Tide 6.92 ft	High Tide 6.73 ft		Moonrise	Moonrise	Moonrise	
00:16	00:50	High Tide 6.49 ft	00:11	00:48	01:19	Moonrise
Sunrise	Sunrise	01:26	High Tide 6.20 ft	High Tide 5.87 ft	High Tide 5.49 ft	01:45
06:01	06:00	Sunrise	02:03	02:45	03:33	High Tide 5.09 ft
Moonset	Moonset	05:59	Sunrise	Sunrise	Sunrise	04:31
06:35	07:21	Moonset	05:58	05:57	05:56	Sunrise
Low Tide -1.13 ft	Low Tide -0.99 ft	08:15	Moonset	Low Tide -0.12 ft	Low Tide 0.22 ft	05:55
07:21	08:00	Low Tide -0.75 ft	09:13	10:06	10:52	Low Tide 0.55 ft
High Tide 5.28 ft	High Tide 5.16 ft	08:40	Low Tide -0.45 ft	Moonset	Moonset	11:41
14:06	14:49	High Tide 5.03 ft	09:22	10:14	11:16	Moonset
Low Tide 2.83 ft	Low Tide 3.03 ft	15:34	High Tide 4.91 ft	High Tide 4.87 ft	High Tide 4.92 ft	12:18
19:01	19:40	Low Tide 3.19 ft	16:22	17:12	18:01	High Tide 5.09 ft
Sunset	Sunset	20:20	Sunset	Sunset	Sunset	18:48
20:24	20:26	Sunset	20:28	20:29	20:30	Sunset
Moonrise	Moonrise	20:27	Low Tide 3.31 ft	Low Tide 3.37 ft	Low Tide 3.30 ft	20:31
22:34	23:26		21:07	22:02	23:10	

Sun 17	Mon 18	Tue 19	Wed 20	Thu 21	Fri 22	Sat 23
Low Tide 3.01 ft	Low Tide 2.50 ft	Low Tide 1.78 ft	Moonrise	Moonrise	Moonrise	Moonrise
00:24	01:34	02:33	03:15	03:40	04:10	04:46
Last Quarter	Moonrise	Moonrise	Low Tide 0.96 ft	Low Tide 0.09 ft	Low Tide -0.73 ft	Low Tide -1.44 ft
00:27	02:31	02:53	03:22	04:08	04:52	05:36

EXHIBIT

MT - 17

Moonrise 02:09 High Tide 4.73 ft 05:41 Sunrise 05:54 Low Tide 0.88 ft 12:29 Moonset 13:21 High Tide 5.35 ft 19:28 Sunset 20:32	Sunrise 05:53 High Tide 4.51 ft 06:58 Low Tide 1.19 ft 13:18 Moonset 14:24 High Tide 5.70 ft 20:05 Sunset 20:33	Sunrise 05:52 High Tide 4.48 ft 08:15 Low Tide 1.50 ft 14:05 Moonset 15:29 Sunset 20:34 High Tide 6.10 ft 20:39	Sunrise 05:52 High Tide 4.61 ft 09:24 Low Tide 1.80 ft 14:51 Moonset 16:37 Sunset 20:34 High Tide 6.53 ft 21:14	Sunrise 05:51 High Tide 4.85 ft 10:25 Low Tide 2.06 ft 15:37 Moonset 17:49 Sunset 20:35 High Tide 6.96 ft 21:50	Sunrise 05:50 High Tide 5.11 ft 11:21 Low Tide 2.29 ft 16:23 Moonset 19:04 Sunset 20:36 High Tide 7.35 ft 22:29	Sunrise 05:49 High Tide 5.35 ft 12:13 Low Tide 2.48 ft 17:09 Moonset 20:21 Sunset 20:37 High Tide 7.66 ft 23:10

Sun 24	**Mon 25**	**Tue 26**	**Wed 27**	**Thu 28**	**Fri 29**	**Sat 30**
New Moon 05:12 Moonrise 05:33 Sunrise 05:49 Low Tide −1.96 ft 06:21 High Tide 5.52 ft 13:04 Low Tide 2.61 ft 17:57 Sunset 20:38 Moonset 21:34 High Tide 7.85 ft 23:55	Sunrise 05:48 Moonrise 06:31 Low Tide −2.24 ft 07:08 High Tide 5.61 ft 13:54 Low Tide 2.69 ft 18:46 Sunset 20:39 Moonset 22:40	High Tide 7.85 ft 00:42 Sunrise 05:47 Moonrise 07:40 Low Tide −2.28 ft 07:56 High Tide 5.66 ft 14:45 Low Tide 2.75 ft 19:39 Sunset 20:40 Moonset 23:34	High Tide 7.65 ft 01:32 Sunrise 05:47 Low Tide −2.07 ft 08:46 Moonrise 08:56 High Tide 5.71 ft 15:37 Low Tide 2.75 ft 20:38 Sunset 20:41	Moonset 00:16 High Tide 7.23 ft 02:27 Sunrise 05:46 Low Tide −1.65 ft 09:38 Moonrise 10:14 High Tide 5.79 ft 16:30 Sunset 20:42 Low Tide 2.68 ft 21:44	Moonset 00:51 High Tide 6.62 ft 03:27 Sunrise 05:45 Low Tide −1.07 ft 10:30 Moonrise 11:30 High Tide 5.94 ft 17:24 Sunset 20:42 Low Tide 2.47 ft 22:58	Moonset 01:19 High Tide 5.92 ft 04:34 Sunrise 05:45 Low Tide −0.38 ft 11:23 Moonrise 12:43 High Tide 6.16 ft 18:16 First Quarter 20:23 Sunset 20:43

Sun 31

Low Tide 2.06 ft
00:16
Moonset
01:44
Sunrise
05:44
High Tide 5.25 ft
05:51
Low Tide 0.34 ft
12:17
Moonrise
13:54
High Tide 6.40 ft
19:05
Sunset
20:44

EXHIBIT

MT-17

Crescent City, California

June 2009

Mon 01	Tue 02	Wed 03	Thu 04	Fri 05	Sat 06
Low Tide 1.46 ft	Moonset	Moonset	Moonset	Moonset	Moonset
01:33	02:31	02:55	03:23	03:55	04:32
Moonset	Low Tide 0.77 ft	Low Tide 0.11 ft	Low Tide -0.43 ft	Low Tide -0.81 ft	Sunrise
02:07	02:40	03:37	04:27	05:11	05:42
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide -1.03 ft
05:44	05:43	05:43	05:42	05:42	05:51
High Tide 4.78 ft	High Tide 4.59 ft	High Tide 4.63 ft	High Tide 4.78 ft	High Tide 4.96 ft	High Tide 5.10 ft
07:16	08:39	09:54	10:58	11:52	12:38
Low Tide 1.04 ft	Low Tide 1.68 ft	Low Tide 2.20 ft	Low Tide 2.59 ft	Low Tide 2.87 ft	Low Tide 3.04 ft
13:12	14:06	14:59	15:49	16:36	17:21
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
15:02	16:09	17:15	18:21	19:26	20:26
High Tide 6.64 ft	High Tide 6.83 ft	Sunset	Sunset	Sunset	Sunset
19:53	20:36	20:46	20:47	20:48	20:48
Sunset	Sunset	High Tide 6.95 ft	High Tide 6.99 ft	High Tide 6.98 ft	High Tide 6.93 ft
20:45	20:45	21:18	21:58	22:36	23:13

Sun 07	Mon 08	Tue 09	Wed 10	Thu 11	Fri 12	Sat 13
Moonset						
05:16		High Tide 6.73 ft	High Tide 6.57 ft	High Tide 6.33 ft		Moonrise
Sunrise	Sunrise	00:27	01:04	01:42	High Tide 6.00 ft	00:12
05:42	05:41	Sunrise	Sunrise	Sunrise	02:23	High Tide 5.59 ft
Low Tide -1.12 ft	Moonset	05:41	05:41	05:41	Sunrise	03:07
06:29	06:08	Moonset	Moonset	Low Tide -0.57 ft	05:41	Sunrise
Full Moon	Low Tide -1.10 ft	07:04	08:05	08:54	Low Tide -0.25 ft	05:41
11:12	07:06	Low Tide -0.99 ft	Low Tide -0.82 ft	Moonset	09:30	Low Tide 0.13 ft
High Tide 5.19 ft	High Tide 5.22 ft	07:42	08:18	09:06	Moonset	10:07
13:19	13:58	High Tide 5.23 ft	High Tide 5.24 ft	High Tide 5.26 ft	10:08	Moonset
Low Tide 3.13 ft	Low Tide 3.18 ft	14:36	15:13	15:50	High Tide 5.33 ft	11:10
18:02	18:42	Low Tide 3.20 ft	Low Tide 3.21 ft	Low Tide 3.20 ft	16:28	High Tide 5.46 ft
Sunset	Sunset	19:21	20:03	20:48	Sunset	17:05
20:49	20:49	Sunset	Sunset	Sunset	20:52	Sunset
Moonrise	Moonrise	20:50	20:51	20:51	Low Tide 3.13 ft	20:52
21:20	22:07	Moonrise	Moonrise	Moonrise	21:40	Low Tide 2.95 ft
High Tide 6.85 ft		22:47	23:20	23:47		22:38
23:50						

Sun 14	Mon 15	Tue 16	Wed 17	Thu 18	Fri 19	Sat 20
Moonrise	Moonrise	Low Tide 2.09 ft	Moonrise	Moonrise	Moonrise	Moonrise
00:34	00:55	00:49	01:40	02:06	02:38	03:19
High Tide 5.12 ft	High Tide 4.65 ft	Moonrise	Low Tide 1.39 ft	Low Tide 0.58 ft	Low Tide -0.26 ft	Low Tide -1.04 ft
03:58	05:01	01:16	01:51	02:48	03:40	04:30
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
05:41	05:41	05:41	05:41	05:41	05:41	05:41
Low Tide 0.58 ft	Low Tide 1.08 ft	High Tide 4.29 ft	High Tide 4.15 ft	High Tide 4.28 ft	High Tide 4.57 ft	High Tide 4.93 ft
10:45	11:24	06:17	07:42	09:03	10:13	11:13
Moonset	Moonset	Low Tide 1.59 ft	Low Tide 2.08 ft	Low Tide 2.50 ft	Low Tide 2.79 ft	Low Tide 2.94 ft
12:12	13:15	12:08	12:57	13:52	14:50	15:48
High Tide 5.64 ft	Last Quarter	Moonset	Moonset	Moonset	Moonset	Moonset
17:42	15:16	14:19	15:28	16:39	17:54	19:09
Sunset	High Tide 5.89 ft	High Tide 6.19 ft	High Tide 6.54 ft	High Tide 6.93 ft	Sunset	Sunset
20:52	18:19	18:57	19:38	20:21	20:54	20:54
Low Tide 2.61 ft	Sunset	Sunset	Sunset	Sunset	High Tide 7.33 ft	High Tide 7.71 ft
23:43	20:53	20:53	20:53	20:54	21:08	21:57

Sun 21	Mon 22	Tue 23	Wed 24	Thu 25	Fri 26	Sat 27
Moonrise	Moonrise	Sunrise	High Tide 8.13 ft	High Tide 7.83 ft	High Tide 7.29 ft	High Tide 6.56 ft
04:11	05:16	05:42	00:31	01:25	02:20	03:19
Low Tide -1.68 ft	Sunrise	Moonrise	Sunrise	Sunrise	Sunrise	Sunrise
05:19	05:42	06:31	05:42	05:43	05:43	05:44

EXHIBIT

MT - 18

Sunrise 05:42 High Tide 5.28 ft 12:05 Low Tide 2.95 ft 16:44 Moonset 20:20 Sunset 20:54 High Tide 8.01 ft 22:47	Low Tide -2.13 ft 06:07 New Moon 12:36 High Tide 5.58 ft 12:54 Low Tide 2.86 ft 17:40 Sunset 20:55 Moonset 21:20 High Tide 8.17 ft 23:39	Low Tide -2.34 ft 06:54 High Tide 5.84 ft 13:41 Low Tide 2.70 ft 18:35 Sunset 20:55 Moonset 22:09	Low Tide -2.28 ft 07:41 Moonrise 07:51 High Tide 6.06 ft 14:26 Low Tide 2.51 ft 19:32 Sunset 20:55 Moonset 22:48	Low Tide -1.95 ft 08:28 Moonrise 09:11 High Tide 6.26 ft 15:12 Low Tide 2.30 ft 20:32 Sunset 20:55 Moonset 23:20	Low Tide -1.39 ft 09:14 Moonrise 10:28 High Tide 6.46 ft 15:57 Sunset 20:55 Low Tide 2.08 ft 21:35 Moonset 23:47	Low Tide -0.64 ft 10:00 Moonrise 11:42 High Tide 6.63 ft 16:43 Sunset 20:55 Low Tide 1.80 ft 22:43

Sun 28	Mon 29	Tue 30
Moonset 00:11 High Tide 5.74 ft 04:24 Sunrise 05:44 Low Tide 0.21 ft 10:46 Moonrise 12:52 High Tide 6.76 ft 17:30 Sunset 20:55 Low Tide 1.45 ft 23:55	Moonset 00:35 First Quarter 04:29 High Tide 4.99 ft 05:38 Sunrise 05:44 Low Tide 1.09 ft 11:34 Moonrise 14:00 High Tide 6.85 ft 18:17 Sunset 20:55	Moonset 00:59 Low Tide 1.02 ft 01:07 Sunrise 05:45 High Tide 4.49 ft 07:03 Low Tide 1.91 ft 12:26 Moonrise 15:08 High Tide 6.88 ft 19:05 Sunset 20:55

EXHIBIT

MT - 18

Crescent City, California

July 2009

			Wed 01	Thu 02	Fri 03	Sat 04
			Moonset	Moonset	Moonset	Moonset
			01:26	01:56	02:32	03:14
			Low Tide 0.55 ft	Low Tide 0.10 ft	Low Tide -0.26 ft	Low Tide -0.52 ft
			02:16	03:17	04:09	04:55
			Sunrise	Sunrise	Sunrise	Sunrise
			05:45	05:46	05:46	05:47
			High Tide 4.33 ft	High Tide 4.46 ft	High Tide 4.70 ft	High Tide 4.94 ft
			08:33	09:54	10:59	11:48
			Low Tide 2.58 ft	Low Tide 3.05 ft	Low Tide 3.31 ft	Low Tide 3.40 ft
			13:23	14:23	15:23	16:17
			Moonrise	Moonrise	Moonrise	Moonrise
			16:14	17:19	18:20	19:16
			High Tide 6.88 ft	High Tide 6.86 ft	Sunset	Sunset
			19:54	20:42	20:54	20:54
			Sunset	Sunset	High Tide 6.85 ft	High Tide 6.87 ft
			20:55	20:54	21:29	22:13
Sun 05	**Mon 06**	**Tue 07**	**Wed 08**	**Thu 09**	**Fri 10**	**Sat 11**
Moonset	Moonset	Full Moon	High Tide 6.87 ft	High Tide 6.75 ft	High Tide 6.52 ft	High Tide 6.18 ft
04:03	04:57	02:22	00:12	00:49	01:26	02:05
Low Tide -0.69 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
05:36	05:48	05:49	05:50	05:50	05:51	05:52
Sunrise	Low Tide -0.78 ft	Moonset	Moonset	Low Tide -0.59 ft	Low Tide -0.35 ft	Low Tide -0.00 ft
05:48	06:13	05:57	06:59	07:53	08:23	08:53
High Tide 5.13 ft	High Tide 5.27 ft	Low Tide -0.80 ft	Low Tide -0.74 ft	Moonset	Moonset	Moonset
12:29	13:04	06:48	07:21	08:01	09:02	10:04
Low Tide 3.38 ft	Low Tide 3.29 ft	High Tide 5.39 ft	High Tide 5.50 ft	High Tide 5.61 ft	High Tide 5.74 ft	High Tide 5.88 ft
17:04	17:46	13:36	14:07	14:37	15:07	15:37
Moonrise	Moonrise	Low Tide 3.18 ft	Low Tide 3.06 ft	Low Tide 2.94 ft	Low Tide 2.80 ft	Sunset
20:05	20:47	18:26	19:05	19:45	20:27	20:51
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Low Tide 2.63 ft
20:54	20:53	20:53	20:53	20:52	20:52	21:13
High Tide 6.89 ft	High Tide 6.91 ft	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
22:55	23:34	21:22	21:51	22:16	22:39	23:00
Sun 12	**Mon 13**	**Tue 14**	**Wed 15**	**Thu 16**	**Fri 17**	**Sat 18**
			Low Tide 1.63 ft			
High Tide 5.74 ft	High Tide 5.24 ft		00:04	Moonrise	Moonrise	Moonrise
02:47	03:36		Moonrise	00:35	01:11	01:56
Sunrise	Sunrise	High Tide 4.73 ft	00:07	Low Tide 1.07 ft	Low Tide 0.40 ft	Low Tide -0.31 ft
05:53	05:53	04:35	Last Quarter	01:10	02:15	03:16
Low Tide 0.45 ft	Low Tide 0.98 ft	Sunrise	02:54	Sunrise	Sunrise	Sunrise
09:24	09:56	05:54	High Tide 4.31 ft	05:56	05:57	05:58
Moonset	Moonset	Low Tide 1.56 ft	05:50	High Tide 4.14 ft	High Tide 4.27 ft	High Tide 4.62 ft
11:06	12:09	10:30	Sunrise	07:20	08:50	10:04
High Tide 6.03 ft	High Tide 6.20 ft	Moonset	05:55	Low Tide 2.70 ft	Low Tide 3.12 ft	Low Tide 3.31 ft
16:07	16:39	13:13	Low Tide 2.16 ft	12:03	13:08	14:20
Sunset	Sunset	High Tide 6.39 ft	11:11	Moonset	Moonset	Moonset
20:51	20:50	17:15	Moonset	15:33	16:46	17:58
Low Tide 2.39 ft	Low Tide 2.06 ft	Sunset	14:22	High Tide 6.86 ft	High Tide 7.16 ft	High Tide 7.51 ft
22:04	23:01	20:50	High Tide 6.61 ft	18:46	19:41	20:40
Moonrise	Moonrise		17:57	Sunset	Sunset	Sunset
23:21	23:42		Sunset	20:48	20:48	20:47
			20:49			
Sun 19	**Mon 20**	**Tue 21**	**Wed 22**	**Thu 23**	**Fri 24**	**Sat 25**
Moonrise	Moonrise	Moonrise	Sunrise	High Tide 8.17 ft	High Tide 7.79 ft	High Tide 7.18 ft
02:53	04:02	05:21	06:01	00:24	01:18	02:12
Low Tide -0.97 ft	Low Tide -1.51 ft	Low Tide -1.85 ft	Low Tide -1.94 ft	Sunrise	Sunrise	Sunrise
04:11	05:03	05:51	06:36	06:02	06:03	06:04

EXHIBIT

MT - 19

Sunrise 05:58 High Tide 5.04 ft 11:01 Low Tide 3.26 ft 15:29 Moonset 19:02 Sunset 20:46 High Tide 7.87 ft 21:38	Sunrise 05:59 High Tide 5.47 ft 11:49 Low Tide 3.02 ft 16:32 Moonset 19:57 Sunset 20:45 High Tide 8.16 ft 22:35	Sunrise 06:00 High Tide 5.87 ft 12:32 Low Tide 2.65 ft 17:31 New Moon 19:35 Moonset 20:41 Sunset 20:45 High Tide 8.28 ft 23:30	Moonrise 06:43 High Tide 6.25 ft 13:14 Low Tide 2.25 ft 18:27 Sunset 20:44 Moonset 21:16	Low Tide -1.74 ft 07:20 Moonrise 08:03 High Tide 6.59 ft 13:54 Low Tide 1.86 ft 19:22 Sunset 20:43 Moonset 21:46	Low Tide -1.28 ft 08:03 Moonrise 09:21 High Tide 6.86 ft 14:34 Low Tide 1.53 ft 20:18 Sunset 20:42 Moonset 22:12	Low Tide -0.60 ft 08:44 Moonrise 10:35 High Tide 7.05 ft 15:15 Sunset 20:41 Low Tide 1.28 ft 21:17 Moonset 22:37

Sun 26	**Mon 27**	**Tue 28**	**Wed 29**	**Thu 30**	**Fri 31**
High Tide 6.42 ft 03:09 Sunrise 06:05 Low Tide 0.23 ft 09:25 Moonrise 11:46 High Tide 7.12 ft 15:56 Sunset 20:40 Low Tide 1.10 ft 22:18 Moonset 23:02	High Tide 5.61 ft 04:11 Sunrise 06:06 Low Tide 1.12 ft 10:07 Moonrise 12:56 High Tide 7.08 ft 16:40 Sunset 20:39 Low Tide 0.97 ft 23:23 Moonset 23:28	High Tide 4.92 ft 05:23 Sunrise 06:07 Low Tide 1.99 ft 10:52 Moonrise 14:04 First Quarter 15:00 High Tide 6.94 ft 17:26 Sunset 20:38 Moonset 23:58	Low Tide 0.83 ft 00:33 Sunrise 06:08 High Tide 4.48 ft 06:49 Low Tide 2.74 ft 11:44 Moonrise 15:10 High Tide 6.76 ft 18:17 Sunset 20:37	Moonset 00:32 Low Tide 0.65 ft 01:44 Sunrise 06:09 High Tide 4.40 ft 08:24 Low Tide 3.30 ft 12:47 Moonrise 16:14 High Tide 6.61 ft 19:14 Sunset 20:36	Moonset 01:12 Low Tide 0.42 ft 02:50 Sunrise 06:10 High Tide 4.59 ft 09:47 Low Tide 3.60 ft 14:01 Moonrise 17:12 High Tide 6.55 ft 20:13 Sunset 20:35

EXHIBIT

MT - 19

Crescent City, California

August 2009

						Sat 01
						Moonset 01:58 Low Tide 0.18 ft 03:46 Sunrise 06:11 High Tide 4.85 ft 10:46 Low Tide 3.64 ft 15:09 Moonrise 18:03 Sunset 20:34 High Tide 6.60 ft 21:08
Sun 02	**Mon 03**	**Tue 04**	**Wed 05**	**Thu 06**	**Fri 07**	**Sat 08**
Moonset 02:51 Low Tide -0.03 ft 04:34 Sunrise 06:12 High Tide 5.09 ft 11:28 Low Tide 3.51 ft 16:05 Moonrise 18:47 Sunset 20:33 High Tide 6.71 ft 21:58	Moonset 03:50 Low Tide -0.20 ft 05:15 Sunrise 06:13 High Tide 5.29 ft 12:02 Low Tide 3.30 ft 16:51 Moonrise 19:24 Sunset 20:31 High Tide 6.84 ft 22:42	Moonset 04:51 Low Tide -0.30 ft 05:50 Sunrise 06:14 High Tide 5.49 ft 12:31 Low Tide 3.05 ft 17:31 Moonrise 19:55 Sunset 20:30 High Tide 6.92 ft 23:21	Moonset 05:53 Sunrise 06:15 Low Tide -0.33 ft 06:22 High Tide 5.68 ft 12:58 Full Moon 17:56 Low Tide 2.79 ft 18:09 Moonrise 20:21 Sunset 20:29 High Tide 6.91 ft 23:59	Sunrise 06:16 Low Tide -0.27 ft 06:52 Moonset 06:55 High Tide 5.88 ft 13:24 Low Tide 2.53 ft 18:46 Sunset 20:28 Moonrise 20:44	High Tide 6.79 ft 00:36 Sunrise 06:17 Low Tide -0.09 ft 07:20 Moonset 07:57 High Tide 6.08 ft 13:50 Low Tide 2.28 ft 19:24 Sunset 20:27 Moonrise 21:06	High Tide 6.56 ft 01:13 Sunrise 06:18 Low Tide 0.20 ft 07:48 Moonset 08:59 High Tide 6.25 ft 14:16 Low Tide 2.03 ft 20:03 Sunset 20:25 Moonrise 21:27
Sun 09	**Mon 10**	**Tue 11**	**Wed 12**	**Thu 13**	**Fri 14**	**Sat 15**
High Tide 6.22 ft 01:52 Sunrise 06:19 Low Tide 0.60 ft 08:15 Moonset 10:01 High Tide 6.41 ft 14:42 Sunset 20:24 Low Tide 1.79 ft 20:45 Moonrise 21:48	High Tide 5.80 ft 02:35 Sunrise 06:20 Low Tide 1.10 ft 08:44 Moonset 11:05 High Tide 6.54 ft 15:10 Sunset 20:23 Low Tide 1.55 ft 21:31 Moonrise 22:11	High Tide 5.32 ft 03:24 Sunrise 06:21 Low Tide 1.66 ft 09:14 Moonset 12:11 High Tide 6.65 ft 15:42 Sunset 20:21 Low Tide 1.32 ft 22:24 Moonrise 22:38	High Tide 4.85 ft 04:23 Sunrise 06:22 Low Tide 2.25 ft 09:49 Moonset 13:20 High Tide 6.73 ft 16:20 Sunset 20:20 Moonrise 23:10 Low Tide 1.06 ft 23:25	High Tide 4.46 ft 05:39 Sunrise 06:23 Low Tide 2.81 ft 10:32 Last Quarter 11:56 Moonset 14:31 High Tide 6.81 ft 17:08 Sunset 20:18 Moonrise 23:49	Low Tide 0.73 ft 00:35 Sunrise 06:24 High Tide 4.33 ft 07:12 Low Tide 3.28 ft 11:30 Moonset 15:41 High Tide 6.91 ft 18:07 Sunset 20:17	Moonrise 00:39 Low Tide 0.30 ft 01:48 Sunrise 06:25 High Tide 4.52 ft 08:42 Low Tide 3.56 ft 12:49 Moonset 16:46 High Tide 7.09 ft 19:15 Sunset 20:16
Sun 16	**Mon 17**	**Tue 18**	**Wed 19**	**Thu 20**	**Fri 21**	**Sat 22**
Moonrise 01:41 Low Tide -0.21 ft 02:54	Moonrise 02:54 Low Tide -0.70 ft 03:52	Moonrise 04:13 Low Tide -1.06 ft 04:43	Low Tide -1.21 ft 05:29 Moonrise 05:33	New Moon 03:02 Low Tide -1.11 ft 06:12	High Tide 7.81 ft 00:19 Sunrise 06:31	High Tide 7.42 ft 01:11 Sunrise 06:32

EXHIBIT

MT-20

Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide -0.76 ft	Low Tide -0.20 ft
06:26	06:27	06:28	06:29	06:30	06:52	07:32
High Tide 4.91 ft	High Tide 5.38 ft	High Tide 5.86 ft	High Tide 6.34 ft	Moonrise	Moonrise	Moonrise
09:50	10:40	11:22	12:00	06:53	08:10	09:24
Low Tide 3.51 ft	Low Tide 3.15 ft	Low Tide 2.60 ft	Low Tide 1.99 ft	High Tide 6.78 ft	High Tide 7.13 ft	High Tide 7.36 ft
14:14	15:27	16:29	17:25	12:38	13:14	13:51
Moonset	Moonset	Moonset	Moonset	Low Tide 1.39 ft	Low Tide 0.90 ft	Low Tide 0.57 ft
17:44	18:32	19:11	19:43	18:18	19:09	20:00
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
20:14	20:13	20:11	20:10	20:08	20:07	20:05
High Tide 7.38 ft	High Tide 7.69 ft	High Tide 7.93 ft	High Tide 7.98 ft	Moonset	Moonset	Moonset
20:25	21:30	22:30	23:26	20:11	20:37	21:02

Sun 23	Mon 24	Tue 25	Wed 26	Thu 27	Fri 28	Sat 29
High Tide 6.85 ft	High Tide 6.19 ft	High Tide 5.53 ft	High Tide 4.98 ft	First Quarter		Moonset
02:04	02:59	03:59	05:08	04:42	Low Tide 0.83 ft	00:45
Sunrise	Sunrise	Sunrise	Sunrise	High Tide 4.65 ft	01:03	Low Tide 0.79 ft
06:33	06:34	06:35	06:36	06:32	Sunrise	02:14
Low Tide 0.51 ft	Low Tide 1.30 ft	Low Tide 2.09 ft	Low Tide 2.80 ft	Sunrise	06:38	Sunrise
08:10	08:49	09:30	10:15	06:37	High Tide 4.62 ft	06:39
Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 3.38 ft	08:05	High Tide 4.80 ft
10:37	11:47	12:57	14:02	11:10	Low Tide 3.74 ft	09:22
High Tide 7.42 ft	High Tide 7.31 ft	High Tide 7.06 ft	High Tide 6.72 ft	Moonrise	12:24	Low Tide 3.80 ft
14:28	15:07	15:48	16:34	15:03	Moonrise	13:48
Sunset	Sunset	Sunset	Sunset	High Tide 6.39 ft	15:58	Moonrise
20:04	20:02	20:00	19:59	17:28	High Tide 6.16 ft	16:44
Low Tide 0.42 ft	Low Tide 0.44 ft	Moonset	Moonset	Sunset	18:34	High Tide 6.11 ft
20:53	21:47	22:31	23:09	19:57	Sunset	19:44
Moonset	Moonset	Low Tide 0.58 ft	Low Tide 0.75 ft	Moonset	19:56	Sunset
21:29	21:58	22:46	23:51	23:54		19:54

Sun 30	Mon 31
Moonset	Moonset
01:42	02:42
Low Tide 0.64 ft	Low Tide 0.48 ft
03:14	04:02
Sunrise	Sunrise
06:40	06:41
High Tide 5.05 ft	High Tide 5.29 ft
10:13	10:49
Low Tide 3.61 ft	Low Tide 3.28 ft
14:58	15:51
Moonrise	Moonrise
17:24	17:57
Sunset	Sunset
19:52	19:51
High Tide 6.23 ft	High Tide 6.41 ft
20:48	21:40

EXHIBIT

MT-20

Crescent City, California

September 2009

		Tue 01	Wed 02	Thu 03	Fri 04	Sat 05
		Moonset	Moonset	Low Tide 0.30 ft	Low Tide 0.43 ft	High Tide 6.60 ft
		03:44	04:46	05:45	06:14	00:23
		Low Tide 0.34 ft	Low Tide 0.27 ft	Moonset	Sunrise	Low Tide 0.66 ft
		04:41	05:15	05:48	06:45	06:41
		Sunrise	Sunrise	Sunrise	Moonset	Sunrise
		06:42	06:43	06:44	06:51	06:46
		High Tide 5.54 ft	High Tide 5.80 ft	High Tide 6.08 ft	Full Moon	Moonset
		11:19	11:45	12:09	09:03	07:53
		Low Tide 2.89 ft	Low Tide 2.48 ft	Low Tide 2.05 ft	High Tide 6.34 ft	High Tide 6.58 ft
		16:34	17:13	17:49	12:33	12:58
		Moonrise	Moonrise	Moonrise	Low Tide 1.65 ft	Low Tide 1.27 ft
		18:24	18:49	19:11	18:25	19:01
		Sunset	Sunset	Sunset	Moonrise	Sunset
		19:49	19:47	19:45	19:33	19:42
		High Tide 6.58 ft	High Tide 6.68 ft	High Tide 6.69 ft	Sunset	Moonrise
		22:26	23:06	23:45	19:44	19:54
Sun 06	**Mon 07**	**Tue 08**	**Wed 09**	**Thu 10**	**Fri 11**	**Sat 12**
High Tide 6.41 ft	High Tide 6.13 ft	High Tide 5.78 ft	High Tide 5.38 ft	High Tide 4.99 ft	High Tide 4.72 ft	
01:03	01:44	02:29	03:21	04:23	05:40	Low Tide 0.37 ft
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	00:09
06:48	06:49	06:50	06:51	06:52	06:53	Sunrise
Low Tide 1.01 ft	Low Tide 1.44 ft	Low Tide 1.93 ft	Low Tide 2.44 ft	Low Tide 2.95 ft	Low Tide 3.39 ft	06:54
07:09	07:38	08:08	08:41	09:21	10:12	High Tide 4.71 ft
Moonset	Moonset	Moonset	Moonset	Moonset	Moonset	07:09
08:57	10:03	11:11	12:21	13:31	14:36	Low Tide 3.69 ft
High Tide 6.77 ft	High Tide 6.91 ft	High Tide 6.98 ft	High Tide 6.99 ft	High Tide 6.93 ft	High Tide 6.82 ft	11:26
13:23	13:50	14:20	14:55	15:38	16:32	Moonset
Low Tide 0.95 ft	Sunset	Sunset	Sunset	Sunset	Last Quarter	15:35
19:39	19:39	19:37	19:36	19:34	19:16	High Tide 6.73 ft
Sunset	Low Tide 0.70 ft	Low Tide 0.54 ft	Moonrise	Moonrise	Sunset	17:42
19:41	20:19	21:04	21:49	22:35	19:32	Sunset
Moonrise	Moonrise	Moonrise	Low Tide 0.46 ft	Low Tide 0.43 ft	Moonrise	19:30
20:17	20:43	21:13	21:56	22:57	23:31	
Sun 13	**Mon 14**	**Tue 15**	**Wed 16**	**Thu 17**	**Fri 18**	**Sat 19**
Moonrise	Moonrise	Moonrise	Low Tide −0.34 ft	Low Tide −0.24 ft	Low Tide 0.05 ft	High Tide 7.14 ft
00:38	01:52	03:09	04:16	05:00	05:42	00:16
Low Tide 0.20 ft	Low Tide −0.05 ft	Low Tide −0.26 ft	Moonrise	Moonrise	Moonrise	Low Tide 0.50 ft
01:23	02:30	03:27	04:27	05:44	06:59	06:21
Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
06:55	06:56	06:57	06:58	06:59	07:00	07:01
High Tide 4.98 ft	High Tide 5.40 ft	High Tide 5.90 ft	High Tide 6.42 ft	High Tide 6.91 ft	New Moon	Moonrise
08:27	09:24	10:08	10:46	11:22	11:44	08:12
Low Tide 3.67 ft	Low Tide 3.26 ft	Low Tide 2.59 ft	Low Tide 1.80 ft	Low Tide 1.03 ft	High Tide 7.31 ft	High Tide 7.57 ft
12:58	14:22	15:30	16:28	17:19	11:57	12:32
Moonset	Moonset	Moonset	Moonset	Moonset	Low Tide 0.38 ft	Low Tide −0.08 ft
16:25	17:06	17:40	18:10	18:36	18:07	18:54
High Tide 6.76 ft	Sunset	Sunset	Sunset	Sunset	Moonset	Sunset
19:02	19:27	19:25	19:23	19:22	19:02	19:18
Sunset	High Tide 6.94 ft	High Tide 7.15 ft	High Tide 7.30 ft	High Tide 7.30 ft	Sunset	Moonset
19:29	20:19	21:27	22:27	23:23	19:20	19:28
Sun 20	**Mon 21**	**Tue 22**	**Wed 23**	**Thu 24**	**Fri 25**	**Sat 26**
High Tide 6.83 ft	High Tide 6.42 ft	High Tide 5.96 ft	High Tide 5.51 ft	High Tide 5.12 ft	High Tide 4.90 ft	Low Tide 0.90 ft
01:07	01:58	02:51	03:48	04:53	06:10	00:15
Low Tide 1.07 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
06:59	07:03	07:04	07:05	07:06	07:07	07:08
Sunrise	Low Tide 1.70 ft	Low Tide 2.33 ft	Low Tide 2.91 ft	Low Tide 3.41 ft	Low Tide 3.78 ft	High Tide 4.89 ft
07:02	07:37	08:15	08:56	09:43	10:44	07:32

EXHIBIT

MT-21

Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 3.93 ft
09:25	10:37	11:45	12:50	13:48	14:38	12:06
High Tide 7.66 ft	High Tide 7.55 ft	High Tide 7.27 ft	High Tide 6.88 ft	High Tide 6.44 ft	High Tide 6.03 ft	Moonrise
13:07	13:42	14:19	14:58	15:43	16:39	15:21
Sunset	Sunset	Sunset	Sunset	Sunset	Sunset	High Tide 5.74 ft
19:16	19:15	19:13	19:11	19:09	19:08	17:50
Low Tide -0.31 ft	Low Tide -0.30 ft	Moonset	Moonset	Moonset	First Quarter	Sunset
19:40	20:27	21:05	21:48	22:37	21:49	19:06
Moonset	Moonset	Low Tide -0.08 ft	Low Tide 0.26 ft	Low Tide 0.62 ft	Moonset	
19:56	20:28	21:15	22:07	23:07	23:32	

Sun 27	**Mon 28**	**Tue 29**	**Wed 30**
Moonset	Moonset	Moonset	Moonset
00:32	01:33	02:35	03:37
Low Tide 1.03 ft	Low Tide 1.02 ft	Low Tide 0.97 ft	Low Tide 0.95 ft
01:24	02:25	03:15	03:54
Sunrise	Sunrise	Sunrise	Sunrise
07:09	07:10	07:11	07:12
High Tide 5.05 ft	High Tide 5.29 ft	High Tide 5.57 ft	High Tide 5.88 ft
08:38	09:24	09:57	10:25
Low Tide 3.79 ft	Low Tide 3.41 ft	Low Tide 2.91 ft	Low Tide 2.35 ft
13:33	14:40	15:31	16:13
Moonrise	Moonrise	Moonrise	Moonrise
15:56	16:26	16:52	17:15
Sunset	Sunset	Sunset	Sunset
19:04	19:03	19:01	18:59
High Tide 5.65 ft	High Tide 5.74 ft	High Tide 5.91 ft	High Tide 6.07 ft
19:08	20:18	21:16	22:05

EXHIBIT

MT-21

Crescent City, California

October 2009

Thu 01	Fri 02	Sat 03
Low Tide 0.99 ft	Low Tide 1.10 ft	Low Tide 1.30 ft
04:29	05:00	05:30
Moonset	Moonset	Moonset
04:39	05:42	06:46
Sunrise	Sunrise	Sunrise
07:13	07:15	07:16
High Tide 6.22 ft	High Tide 6.55 ft	High Tide 6.86 ft
10:51	11:15	11:40
Low Tide 1.76 ft	Low Tide 1.18 ft	Low Tide 0.63 ft
16:51	17:27	18:02
Moonrise	Moonrise	Moonrise
17:37	17:59	18:21
Sunset	Sunset	Sunset
18:57	18:56	18:54
High Tide 6.19 ft	High Tide 6.25 ft	Full Moon
22:49	23:31	23:11

Sun 04	Mon 05	Tue 06	Wed 07	Thu 08	Fri 09	Sat 10
High Tide 6.25 ft	High Tide 6.17 ft	High Tide 6.01 ft	High Tide 5.78 ft	High Tide 5.51 ft	High Tide 5.27 ft	High Tide 5.17 ft
00:13	00:56	01:40	02:29	03:23	04:26	05:39
Low Tide 1.58 ft	Low Tide 1.92 ft	Low Tide 2.31 ft	Sunrise	Sunrise	Sunrise	Sunrise
06:00	06:31	07:04	07:20	07:21	07:22	07:23
Sunrise	Sunrise	Sunrise	Low Tide 2.71 ft	Low Tide 3.11 ft	Low Tide 3.46 ft	Low Tide 3.72 ft
07:17	07:18	07:19	07:40	08:20	09:09	10:14
Moonset	Moonset	Moonset	Moonset	Moonset	Moonset	Moonset
07:52	09:01	10:11	11:21	12:29	13:30	14:22
High Tide 7.12 ft	High Tide 7.31 ft	High Tide 7.41 ft	High Tide 7.41 ft	High Tide 7.29 ft	High Tide 7.06 ft	High Tide 6.75 ft
12:06	12:35	13:05	13:41	14:21	15:11	16:12
Low Tide 0.17 ft	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
18:39	18:51	18:49	18:47	18:46	18:44	18:42
Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
18:46	19:15	19:51	20:34	21:27	22:30	23:41
Sunset	Low Tide −0.18 ft	Low Tide −0.38 ft	Low Tide −0.42 ft	Low Tide −0.33 ft	Low Tide −0.15 ft	Low Tide 0.03 ft
18:52	19:17	19:58	20:45	21:37	22:38	23:45

Sun 11	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16	Sat 17
	Low Tide 0.17 ft	Low Tide 0.27 ft	Low Tide 0.42 ft	Low Tide 0.64 ft	Low Tide 0.97 ft	Low Tide 1.37 ft
Last Quarter	00:54	01:58	02:54	03:43	04:27	05:09
01:56	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
High Tide 5.29 ft	00:55	02:11	03:25	04:39	05:51	07:03
06:53	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
Sunrise	07:26	07:27	07:28	07:29	07:30	07:31
07:24	High Tide 5.62 ft	High Tide 6.06 ft	High Tide 6.56 ft	High Tide 7.05 ft	High Tide 7.45 ft	High Tide 7.73 ft
Low Tide 3.73 ft	07:57	08:47	09:29	10:07	10:43	11:17
11:40	Low Tide 3.37 ft	Low Tide 2.66 ft	Low Tide 1.79 ft	Low Tide 0.90 ft	Low Tide 0.13 ft	Moonset
Moonset	13:12	14:28	15:30	16:23	17:11	17:55
15:05	Moonset	Moonset	Moonset	Moonset	Moonset	Low Tide −0.45 ft
High Tide 6.45 ft	15:40	16:10	16:37	17:03	17:28	17:56
17:29	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
Sunset	18:39	18:37	18:36	18:34	18:33	18:31
18:41	High Tide 6.28 ft	High Tide 6.29 ft	High Tide 6.38 ft	High Tide 6.46 ft	High Tide 6.48 ft	New Moon
	18:55	20:15	21:26	22:28	23:23	22:32

Sun 18	Mon 19	Tue 20	Wed 21	Thu 22	Fri 23	Sat 24
High Tide 6.43 ft	High Tide 6.29 ft	High Tide 6.09 ft	High Tide 5.84 ft	High Tide 5.58 ft	High Tide 5.35 ft	High Tide 5.22 ft
00:16	01:06	01:55	02:44	03:37	04:34	05:38
Low Tide 1.82 ft	Low Tide 2.28 ft	Low Tide 2.73 ft	Sunrise	Sunrise	Sunrise	Sunrise
05:48	06:28	07:07	07:36	07:37	07:38	07:39
Sunrise	Sunrise	Sunrise	Low Tide 3.14 ft	Low Tide 3.50 ft	Low Tide 3.79 ft	Low Tide 3.97 ft
07:32	07:33	07:35	07:46	08:29	09:18	10:20

EXHIBIT

MT - 22

Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
08:15	09:25	10:33	11:34	12:29	13:15	13:53
High Tide 7.83 ft	High Tide 7.76 ft	High Tide 7.54 ft	High Tide 7.20 ft	High Tide 6.79 ft	High Tide 6.34 ft	High Tide 5.90 ft
11:52	12:26	13:01	13:38	14:16	15:00	15:53
Moonset	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
18:25	18:28	18:27	18:25	18:24	18:22	18:21
Sunset	Moonset	Moonset	Moonset	Moonset	Moonset	Moonset
18:30	19:00	19:41	20:28	21:22	22:20	23:21
Low Tide -0.77 ft	Low Tide -0.85 ft	Low Tide -0.71 ft	Low Tide -0.40 ft	Low Tide 0.01 ft	Low Tide 0.44 ft	Low Tide 0.82 ft
18:39	19:21	20:03	20:47	21:34	22:26	23:23
Sun 25	**Mon 26**	**Tue 27**	**Wed 28**	**Thu 29**	**Fri 30**	**Sat 31**
	Moonset	Low Tide 1.31 ft	Low Tide 1.47 ft	Low Tide 1.63 ft	Low Tide 1.82 ft	Low Tide 2.03 ft
High Tide 5.23 ft	00:22	01:20	02:10	02:54	03:32	04:09
06:43	Low Tide 1.11 ft	Moonset	Moonset	Moonset	Moonset	Moonset
Sunrise	00:23	01:24	02:25	03:27	04:30	05:35
07:40	High Tide 5.38 ft	Sunrise	Sunrise	Sunrise	Sunrise	Sunrise
Low Tide 3.97 ft	07:38	07:43	07:44	07:45	07:46	07:48
11:39	Sunrise	High Tide 5.63 ft	High Tide 5.95 ft	High Tide 6.30 ft	High Tide 6.68 ft	High Tide 7.05 ft
Moonrise	07:42	08:21	08:55	09:25	09:53	10:21
14:25	Low Tide 3.71 ft	Low Tide 3.22 ft	Low Tide 2.58 ft	Low Tide 1.87 ft	Moonrise	Moonrise
High Tide 5.52 ft	13:02	14:10	15:03	15:46	16:23	16:47
17:00	Moonrise	Moonrise	Moonrise	Moonrise	Low Tide 1.14 ft	Low Tide 0.43 ft
First Quarter	14:52	15:17	15:39	16:01	16:25	17:03
17:41	Sunset	Sunset	Sunset	Sunset	Sunset	Sunset
Sunset	18:18	18:17	18:15	18:14	18:13	18:11
18:19	High Tide 5.28 ft	High Tide 5.22 ft	High Tide 5.30 ft	High Tide 5.45 ft	High Tide 5.62 ft	High Tide 5.79 ft
	18:19	19:36	20:43	21:41	22:32	23:19

EXHIBIT

MT-22

Crescent City, California

November 2009

Sun 01	Mon 02	Tue 03	Wed 04	Thu 05	Fri 06	Sat 07
	Low Tide 2.52 ft					
Low Tide 2.27 ft	04:21		High Tide 5.99 ft	High Tide 5.92 ft	High Tide 5.82 ft	High Tide 5.77 ft
03:44	Sunrise	Low Tide 2.78 ft	00:39	01:29	02:23	03:21
Moonset	06:50	04:58	Low Tide 3.03 ft	Low Tide 3.27 ft	Sunrise	Sunrise
05:43	Moonset	Sunrise	05:38	06:21	06:55	06:56
Sunrise	06:54	06:51	Sunrise	Sunrise	Low Tide 3.48 ft	Low Tide 3.63 ft
06:49	High Tide 7.67 ft	Moonset	06:53	06:54	07:10	08:09
High Tide 7.39 ft	10:22	08:06	Moonset	Moonset	Moonset	Moonset
09:50	Full Moon	High Tide 7.86 ft	09:17	10:22	11:18	12:04
Moonrise	11:15	10:56	High Tide 7.93 ft	High Tide 7.86 ft	High Tide 7.62 ft	High Tide 7.22 ft
16:15	Moonrise	Sunset	11:34	12:16	13:03	13:58
Low Tide -0.21 ft	16:49	17:08	Sunset	Sunset	Sunset	Sunset
16:40	Sunset	Moonrise	17:07	17:05	17:04	17:03
Sunset	17:09	17:30	Moonrise	Moonrise	Low Tide -0.91 ft	Low Tide -0.55 ft
17:10	Low Tide -0.71 ft	Low Tide -1.05 ft	18:21	19:23	20:23	21:19
High Tide 5.92 ft	17:18	18:00	Low Tide -1.20 ft	Low Tide -1.14 ft	Moonrise	Moonrise
23:05	High Tide 5.99 ft		18:44	19:31	20:32	21:47
	23:51					

Sun 08	Mon 09	Tue 10	Wed 11	Thu 12	Fri 13	Sat 14
High Tide 5.83 ft	High Tide 6.04 ft		Low Tide 0.85 ft	Low Tide 1.33 ft	Low Tide 1.80 ft	Low Tide 2.23 ft
04:22	05:22	Moonrise	00:18	01:14	02:05	02:53
Sunrise	Sunrise	00:15	Moonrise	Moonrise	Moonrise	Moonrise
06:57	06:59	High Tide 6.38 ft	01:27	02:38	03:48	04:58
Low Tide 3.64 ft	Last Quarter	06:16	Sunrise	Sunrise	Sunrise	Sunrise
09:23	07:57	Sunrise	07:01	07:02	07:04	07:05
Moonset	Low Tide 3.38 ft	07:00	High Tide 6.79 ft	High Tide 7.20 ft	High Tide 7.55 ft	High Tide 7.80 ft
12:41	10:48	Low Tide 2.78 ft	07:04	07:47	08:27	09:05
High Tide 6.69 ft	Moonset	12:12	Low Tide 1.95 ft	Low Tide 1.05 ft	Moonset	Moonset
15:03	13:13	Moonset	13:24	14:24	14:56	15:24
Sunset	High Tide 6.16 ft	13:40	Moonset	Moonset	Low Tide 0.24 ft	Low Tide -0.39 ft
17:02	16:21	Sunset	14:05	14:30	15:16	16:02
Low Tide -0.11 ft	Sunset	17:00	Sunset	Sunset	Sunset	Sunset
22:18	17:01	High Tide 5.77 ft	16:59	16:58	16:57	16:56
Moonrise	Low Tide 0.36 ft	17:47	High Tide 5.61 ft	High Tide 5.63 ft	High Tide 5.74 ft	High Tide 5.86 ft
23:02	23:19		19:11	20:26	21:31	22:29

Sun 15	Mon 16	Tue 17	Wed 18	Thu 19	Fri 20	Sat 21
Low Tide 2.62 ft	Low Tide 2.96 ft	High Tide 5.99 ft	High Tide 5.95 ft	High Tide 5.87 ft	High Tide 5.76 ft	High Tide 5.67 ft
03:38	04:21	00:07	00:52	01:36	02:21	03:08
Moonrise	Sunrise	Low Tide 3.23 ft	Low Tide 3.46 ft	Low Tide 3.65 ft	Low Tide 3.80 ft	Sunrise
06:08	07:07	05:03	05:44	06:25	07:08	07:13
Sunrise	Moonrise	Sunrise	Sunrise	Sunrise	Sunrise	Low Tide 3.91 ft
07:06	07:16	07:08	07:10	07:11	07:12	07:56
High Tide 7.91 ft	High Tide 7.88 ft	Moonrise	Moonrise	Moonrise	Moonrise	Moonrise
09:42	10:19	08:20	09:18	10:08	10:49	11:24
Moonset	New Moon	High Tide 7.74 ft	High Tide 7.52 ft	High Tide 7.22 ft	High Tide 6.87 ft	High Tide 6.47 ft
15:57	11:14	10:55	11:31	12:08	12:47	13:29
Low Tide -0.80 ft	Moonset	Sunset	Sunset	Sunset	Sunset	Sunset
16:44	16:35	16:54	16:53	16:52	16:52	16:51
Sunset	Sunset	Moonset	Moonset	Moonset	Low Tide -0.12 ft	Low Tide 0.28 ft
16:55	16:55	17:20	18:11	19:09	20:05	20:48
High Tide 5.95 ft	Low Tide -0.98 ft	Low Tide -0.96 ft	Low Tide -0.78 ft	Low Tide -0.49 ft	Moonset	Moonset
23:20	17:25	18:04	18:44	19:24	20:09	21:10

Sun 22	Mon 23	Tue 24	Wed 25	Thu 26	Fri 27	Sat 28
High Tide 5.63 ft	High Tide 5.68 ft	High Tide 5.83 ft	Moonset	Moonset	Low Tide 2.32 ft	Low Tide 2.65 ft
03:56	04:44	05:29	00:13	01:14	00:41	01:28
Sunrise	Sunrise	Sunrise	High Tide 6.06 ft	High Tide 6.36 ft	Moonset	Moonset
07:14	07:15	07:17	06:09	06:46	02:17	03:23

EXHIBIT

MT - 23

Low Tide 3.95 ft	Low Tide 3.86 ft	Low Tide 3.56 ft	Sunrise	Sunrise	Sunrise	Sunrise
08:53	10:01	11:16	07:18	07:19	07:20	07:21
Moonrise	Moonrise	Moonrise	Low Tide 3.04 ft	Moonrise	High Tide 6.71 ft	High Tide 7.09 ft
11:52	12:18	12:40	12:26	13:24	07:20	07:54
High Tide 6.02 ft	High Tide 5.55 ft	First Quarter	Moonrise	Low Tide 2.35 ft	Moonrise	Moonrise
14:17	15:13	13:38	13:02	13:24	13:46	14:12
Sunset	Sunset	High Tide 5.12 ft	Sunset	Sunset	Low Tide 1.56 ft	Low Tide 0.76 ft
16:50	16:50	16:23	16:49	16:48	14:13	14:57
Low Tide 0.70 ft	Low Tide 1.13 ft	Sunset	High Tide 4.84 ft	High Tide 4.78 ft	Sunset	Sunset
21:33	22:18	16:49	17:44	19:04	16:48	16:47
Moonset	Moonset	Low Tide 1.54 ft	Low Tide 1.95 ft		High Tide 4.91 ft	High Tide 5.17 ft
22:12	23:12	23:06	23:54		20:15	21:16

Sun 29	**Mon 30**
Low Tide 2.92 ft	Low Tide 3.14 ft
02:15	03:00
Moonset	Moonset
04:31	05:43
Sunrise	Sunrise
07:22	07:23
High Tide 7.47 ft	High Tide 7.84 ft
08:30	09:08
Moonrise	Moonrise
14:43	15:21
Low Tide -0.01 ft	Low Tide -0.69 ft
15:38	16:20
Sunset	Sunset
16:47	16:47
High Tide 5.46 ft	High Tide 5.74 ft
22:10	22:59

EXHIBIT

MT-23

Crescent City, California

December 2009

Tue 01	Wed 02	Thu 03	Fri 04	Sat 05
Low Tide 3.28 ft				
03:46		High Tide 6.12 ft	High Tide 6.22 ft	High Tide 6.32 ft
Moonset	Low Tide 3.37 ft	00:33	01:21	02:09
06:56	04:33	Low Tide 3.42 ft	Low Tide 3.43 ft	Low Tide 3.40 ft
Sunrise	Sunrise	05:20	06:11	07:07
07:24	07:25	Sunrise	Sunrise	Sunrise
High Tide 8.15 ft	Moonset	07:26	07:27	07:28
09:48	08:06	Moonset	Moonset	Moonset
Moonrise	High Tide 8.36 ft	09:07	09:59	10:40
16:08	10:30	High Tide 8.42 ft	High Tide 8.29 ft	High Tide 7.94 ft
Sunset	Sunset	11:16	12:04	12:56
16:46	16:46	Sunset	Sunset	Sunset
Low Tide -1.21 ft	Moonrise	16:46	16:46	16:46
17:02	17:07	Moonrise	Low Tide -1.52 ft	Low Tide -1.17 ft
Full Moon	Low Tide -1.54 ft	18:16	19:18	20:06
23:32	17:46	Low Tide -1.65 ft	Moonrise	Moonrise
High Tide 5.96 ft		18:31	19:32	20:49
23:46				

Sun 06	Mon 07	Tue 08	Wed 09	Thu 10	Fri 11	Sat 12
High Tide 6.44 ft	High Tide 6.61 ft	High Tide 6.84 ft	Moonrise		Low Tide 2.32 ft	Low Tide 2.89 ft
02:59	03:49	04:40	00:30	Moonrise	00:30	01:27
Sunrise	Sunrise	Sunrise	High Tide 7.10 ft	01:40	Moonrise	Moonrise
07:29	07:30	07:31	05:30	High Tide 7.36 ft	02:49	03:57
Low Tide 3.32 ft	Low Tide 3.11 ft	Low Tide 2.72 ft	Sunrise	06:18	High Tide 7.58 ft	Sunrise
08:10	09:21	10:39	07:32	Sunrise	07:05	07:34
Moonset	Moonset	Moonset	Low Tide 2.12 ft	07:33	Sunrise	High Tide 7.73 ft
11:14	11:44	12:10	11:58	Moonset	07:34	07:50
High Tide 7.37 ft	High Tide 6.64 ft	High Tide 5.90 ft	Moonset	13:00	Moonset	Moonset
13:52	14:56	16:11	12:34	Low Tide 1.38 ft	13:27	13:57
Sunset	Sunset	Last Quarter	Sunset	13:09	Low Tide 0.64 ft	Low Tide 0.02 ft
16:46	16:45	16:15	16:45	Sunset	14:11	15:05
Low Tide -0.62 ft	Low Tide 0.07 ft	Sunset	High Tide 5.33 ft	16:46	Sunset	Sunset
20:56	21:47	16:45	17:37	High Tide 5.08 ft	16:46	16:46
Moonrise	Moonrise	Low Tide 0.84 ft	Low Tide 1.62 ft	19:07	High Tide 5.13 ft	High Tide 5.34 ft
22:05	23:19	22:39	23:33		20:30	21:39

Sun 13	Mon 14	Tue 15	Wed 16	Thu 17	Fri 18	Sat 19
			High Tide 5.91 ft			
Low Tide 3.30 ft	Low Tide 3.55 ft		00:05	High Tide 5.98 ft	High Tide 6.01 ft	High Tide 6.02 ft
02:23	03:15	Low Tide 3.69 ft	New Moon	00:43	01:20	01:56
Moonrise	Moonrise	04:03	04:03	Low Tide 3.76 ft	Low Tide 3.76 ft	Low Tide 3.74 ft
05:05	06:10	Moonrise	Low Tide 3.75 ft	05:29	06:10	06:51
Sunrise	Sunrise	07:09	04:48	Sunrise	Sunrise	Sunrise
07:35	07:36	Sunrise	Sunrise	07:38	07:39	07:39
High Tide 7.80 ft	High Tide 7.81 ft	07:37	07:37	Moonrise	Moonrise	Moonrise
08:34	09:16	High Tide 7.76 ft	Moonrise	08:46	09:23	09:53
Moonset	Moonset	09:56	08:02	High Tide 7.52 ft	High Tide 7.32 ft	High Tide 7.04 ft
14:33	15:15	Moonset	High Tide 7.66 ft	11:13	11:51	12:28
Low Tide -0.42 ft	Low Tide -0.68 ft	16:03	10:35	Sunset	Sunset	Sunset
15:52	16:34	Sunset	Sunset	16:47	16:47	16:48
Sunset	Sunset	16:46	16:47	Moonset	Moonset	Low Tide -0.12 ft
16:46	16:46	Low Tide -0.78 ft	Moonset	17:58	18:59	19:37
High Tide 5.58 ft	High Tide 5.78 ft	17:14	16:59	Low Tide -0.63 ft	Low Tide -0.41 ft	Moonset
22:36	23:23		Low Tide -0.76 ft	18:27	19:03	20:01
			17:51			

Sun 20	Mon 21	Tue 22	Wed 23	Thu 24	Fri 25	Sat 26
High Tide 6.04 ft	High Tide 6.09 ft	High Tide 6.18 ft	High Tide 6.32 ft	Moonset	Moonset	Moonset
02:31	03:07	03:42	04:18	00:03	01:05	02:11

EXHIBIT

MT-24

Low Tide 3.71 ft	Sunrise	Sunrise	Sunrise	High Tide 6.50 ft	High Tide 6.72 ft	High Tide 7.00 ft
07:35	07:40	07:41	07:41	04:54	05:33	06:14
Sunrise	Low Tide 3.64 ft	Low Tide 3.48 ft	Low Tide 3.19 ft	Sunrise	Sunrise	Sunrise
07:40	08:25	09:21	10:24	07:42	07:42	07:42
Moonrise	Moonrise	Moonrise	Moonrise	First Quarter	Moonrise	Moonrise
10:20	10:43	11:05	11:26	09:36	12:11	12:39
High Tide 6.67 ft	High Tide 6.20 ft	High Tide 5.67 ft	High Tide 5.12 ft	Low Tide 2.74 ft	Low Tide 2.12 ft	Low Tide 1.39 ft
13:08	13:50	14:38	15:38	11:31	12:35	13:34
Sunset	Sunset	Sunset	Sunset	Moonrise	Sunset	Sunset
16:48	16:49	16:49	16:50	11:47	16:51	16:52
Low Tide 0.25 ft	Low Tide 0.70 ft	Low Tide 1.22 ft	Low Tide 1.77 ft	Sunset	High Tide 4.48 ft	High Tide 4.58 ft
20:12	20:46	21:20	21:57	16:51	18:23	19:51
Moonset	Moonset	Moonset		High Tide 4.68 ft	Low Tide 2.87 ft	
21:02	22:02	23:02		16:54	23:26	
				Low Tide 2.34 ft		
				22:38		

Sun 27	**Mon 28**	**Tue 29**	**Wed 30**	**Thu 31**
Low Tide 3.31 ft	Low Tide 3.60 ft	Low Tide 3.72 ft	Low Tide 3.68 ft	Low Tide 3.52 ft
00:22	01:24	02:25	03:22	04:16
Moonset	Moonset	Moonset	Moonset	Sunrise
03:19	04:31	05:41	06:48	07:43
High Tide 7.32 ft	Sunrise	Sunrise	Sunrise	Moonset
06:59	07:43	07:43	07:43	07:45
Sunrise	High Tide 7.69 ft	High Tide 8.07 ft	High Tide 8.42 ft	High Tide 8.66 ft
07:43	07:46	08:36	09:25	10:16
Moonrise	Moonrise	Moonrise	Moonrise	Full Moon
13:12	13:53	14:46	15:51	11:14
Low Tide 0.60 ft	Low Tide −0.16 ft	Low Tide −0.84 ft	Low Tide −1.36 ft	Sunset
14:26	15:15	16:02	16:47	16:56
Sunset	Sunset	Sunset	Sunset	Moonrise
16:53	16:53	16:54	16:55	17:05
High Tide 4.90 ft	High Tide 5.30 ft	High Tide 5.69 ft	High Tide 6.04 ft	Low Tide −1.67 ft
21:03	22:01	22:50	23:35	17:31

EXHIBIT

MT-24

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PARALYTIC SHELLFISH

EXHIBIT PS

State of California—Health and Human Services Agency

California Department of Public Health

HOWARD BACKER, MD, MPH
Interim Director

EDMUND G. BROWN JR.
Governor

MUSSEL QUARANTINE ORDER

Effective March 25 through October 31, 2011

A quarantine is hereby established on all species of mussels taken by recreational sport harvesters from the ocean shore of California. The quarantine area extends from the Oregon border south to the Mexican border, including all bays, inlets, and harbors.

This quarantine is established to protect and preserve the public health under the authority of Section 100170 of the California Health and Safety Code. During the quarantine season, mussels may concentrate naturally occurring toxins that are highly poisonous to humans.

DO NOT EAT MUSSELS HARVESTED IN VIOLATION OF THIS QUARANTINE

State law prohibits the sale or offering for sale for human consumption of any bivalve (two-shelled) shellfish, except by a State-certified commercial shellfish harvester or dealer. Shellfish sold by certified harvesters or dealers are subject to frequent mandatory testing and are not subject to this quarantine.

Mussels may be sold for use as bait when displayed and sold in containers labeled in boldfaced type letters at least one-half inch in height as follows:

MUSSELS FOR BAIT ONLY
UNFIT FOR HUMAN FOOD

Persons taking clams or scallops are warned to remove and discard the digestive organs or viscera and any other dark parts. Only the white meat of clams and scallops should be prepared for human consumption. In addition, bivalve shellfish should not be taken for food from any area subject to sewage or chemical contamination.

All health officers and their authorized representatives are hereby instructed to enforce the provisions of this quarantine order, which shall be effective from March 25 through October 31, 2011. The health officers of the coastal and bay counties are instructed to post copies of this order or other suitable placards in conspicuous places advising the public of this quarantine.

for Howard Backer, MD, MPH
Interim Director

EXHIBIT

P S-01

CDPH California Department of PublicHealth News Release

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

FOR IMMEDIATE RELEASE
October 27, 2011
PH11-048

CONTACT: Mike Sicilia
Norma Arceo
(916) 440-7259

SPORT-HARVESTED MUSSELS QUARANTINE LIFTED ALONG CALIFORNIA COASTLINE, EXCEPT CHANNEL ISLANDS REGION

SACRAMENTO – The California Department of Public Health (CDPH) announced today that the statewide annual quarantine on mussels taken by sport harvesters from California's ocean waters ends at midnight on Monday, October 31, 2011.

Sampling of mussels has confirmed that shellfish-borne paralytic shellfish poisoning (PSP) toxins and domoic acid are at safe or undetectable levels with the exception of the northern Channel Islands region (Anacapa, Santa Cruz, Santa Rosa and San Miguel Islands). The health advisory will remain in effect for mussels and other bivalve shellfish in this region. Also included in the continuing health advisory is the viscera or internal organs of small finfish and crustaceans like lobster and crab in the northern Channel Island region and the coastline of Santa Barbara County.

The annual mussel quarantine is issued for the entire California coastline, usually from May 1 through October 31. The quarantine applies only to sport harvested mussels. Commercially harvested shellfish are not included in the quarantine as other steps are taken to assure shellfish entering the marketplace are free of toxins.

PSP is a form of nervous system poisoning. Concentrated levels of the PSP toxins can develop in mussels and other bivalve shellfish when they feed on certain naturally occurring marine plankton. Domoic Acid Poisoning (DAP), sometimes referred to as Amnesic Shellfish Poisoning (ASP), has been linked to filter-feeding animals like bivalve shellfish. No known human cases of ASP have occurred in California this season.

CDPH issues warnings or quarantines when needed. Local health departments, various State and federal agencies participate in the monitoring program. Consumers can receive updated information about shellfish poisoning by calling the Shellfish Information Line at (800) 553-4133.

www.cdph.ca.gov

EXHIBIT

P S-02

QUARANTINE OF SPORT-HARVESTED MUSSELS IN EFFECT

Date: 5/8/2009

Number: 09-41

Contact: Al Lundeen or Ronald Owens - (916) 440-7259

SACRAMENTO

The annual quarantine of all mussel species harvested by the public on California's coasts, bays and estuaries became effective May 1 and continues through October 31.

The statewide mussel quarantine is intended to prevent human cases of paralytic shellfish poisoning (PSP) and domoic acid poisoning (DAP). The quarantine applies only to sport-harvested mussels.

Paralytic shellfish poisoning (PSP) is a form of nervous system poisoning. Concentrated levels of the PSP toxins can develop in California mussels and other bivalve shellfish when they feed on certain naturally occurring marine plankton. The majority of human cases of PSP illnesses occur between spring and fall. PSP affects the human central nervous system, producing a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms typically are followed by disturbed balance, lack of muscular coordination, slurred speech and difficulty swallowing. In severe poisonings, complete muscular paralysis and death from asphyxiation can occur.

Domoic acid poisoning (DAP) has been linked in some cases to natural food sources for filter-feeding animals like bivalve shellfish. To date, no known cases of human DAP have occurred in California; but domoic acid has been linked to several episodes of severe poisoning of marine mammals along the Pacific Coast and may have caused several mild cases of human poisoning in the state of Washington. DAP symptoms can occur within 30 minutes to 24 hours after eating toxic seafood. In mild cases, symptoms may include vomiting, diarrhea, abdominal cramps, headache and dizziness. These symptoms disappear completely within several days. In severe cases, the victim may experience excessive bronchial secretions, difficulty breathing, confusion, and disorientation, and cardiovascular instability, seizures permanent loss of short-term memory, coma and death.

There is no known antidote to PSP and DAP and cooking cannot be relied upon to destroy them. Anyone experiencing symptoms of PSP or DAP should seek immediate medical care.

Consumers of sport-harvested, bivalve (two-shelled) clams or scallops are advised to eat only the white meat, removing and discarding the dark-colored organs or viscera before cooking. Shellfish for human consumption should only be taken from areas free of sewage or chemical contamination during all times of the year.

No commercially harvested shellfish are included in the annual quarantine. All commercial shellfish harvesters in California are certified by the state and subject to strict requirements to ensure that all oysters, clams and mussels entering the marketplace are free of toxins. Commercial harvesting is stopped immediately if potentially dangerous levels of toxins are found.

For updated information on quarantines and shellfish toxins, call CDPH's Shellfish Bio-toxin Information Line at (510) 412-4643 or toll-free at (800) 553-4133.

Last modified on: 6/8/2009 10:25 AM

EXHIBIT

P S-03

Early Quarantine of Sport-Harvested Mussels Begins Today

Date: 3/29/2011

Number: 11-017

Contact: Al Lundeen, Ronald Owens (916) 440-7259

SACRAMENTO

Coming a month earlier than in normal years, the annual quarantine of all mussel species publicly harvested along the California coast takes effect today. The quarantine is beginning early this year because testing by the California Department of Public Health (CDPH) detected elevated levels of domoic acid and paralytic shellfish poisoning.

"Poisoning from eating mussels can lead to severe illness, including coma and death," said CDPH Interim Director Dr. Howard Backer. "It is critical that individuals do not consume sport-harvested mussels because there are no known antidotes to the toxins found in these mussels and cooking does not reliably eliminate the toxins."

Both domoic acid poisoning (DAP) and paralytic shellfish poisoning (PSP) are linked to natural food sources for filter-feeding animals, including bivalve shellfish. The overwhelming majority of illnesses among humans occur between spring and fall. DAP symptoms can occur within 30 minutes to 24 hours after eating toxic seafood. In mild cases, vomiting, diarrhea, abdominal cramps, headache and dizziness may occur. These symptoms disappear completely within several days. In severe cases, the victim may experience excessive bronchial secretions, difficulty breathing, confusion, disorientation, cardiovascular instability, seizures, and permanent loss of short-term memory, coma and death. PSP affects the central nervous system by producing a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. Typical symptoms are loss of balance, lack of muscular coordination, slurred speech and difficulty swallowing. In severe poisonings, complete muscular paralysis and death from asphyxiation can occur.

The mussel quarantine runs through October 31. It applies to sport-harvested mussels along the coast, including all bays, harbors and estuaries.

Commercially harvested shellfish are not included in the annual quarantine. These products are certified by the state and subject to strict requirements to ensure that all mussels, oysters and clams entering the marketplace are free of toxins.

For updated information on quarantines and shellfish toxins, call the CDPH shellfish information line at (800) 553-4133.

Last modified on: 3/29/2011 10:37 AM

EXHIBIT

P S-04

SPORT-HARVESTED MUSSELS QUARANTINE LIFTED ALONG CALIFORNIA COASTLINE, EXCEPT CHANNEL ISLANDS REGION

Date: 10/29/2010

Number: 10-080

Contact: Al Lundeen (916) 440-7259

SACRAMENTO

The California Department of Public Health (CDPH) announced today that the statewide annual quarantine on mussels taken by sport harvesters from California's ocean waters ends at midnight on Sunday, October 31.

Sampling of mussels confirmed that shellfish-borne paralytic shellfish poisoning (PSP) toxins and domoic acid are at safe or undetectable levels with the exception of the northern Channel Islands region (Anacapa, Santa Cruz, Santa Rosa and San Miguel islands).

The quarantine on sport-harvesting of mussels, other shellfish, fish and the viscera of crustaceans will remain in effect for the Channel Islands.

The annual mussels quarantine is issued for the entire California coastline, usually from May 1 through October 31.The quarantine applies only to sport-harvested mussels. Commercially harvested shellfish are not included in the quarantine as other steps are taken to assure shellfish entering the marketplace are free of toxins.

PSP is a form of nervous system poisoning. Concentrated levels of the PSP toxins can develop in mussels and other bivalve shellfish when they feed on certain naturally occurring marine plankton.

Domoic Acid Poisoning (DAP) -- sometimes referred to as Amnesic Shellfish Poisoning (ASP) -- has been linked to natural food sources for filter-feeding animals like bivalve shellfish. No known cases of human Domoic Acid Poisoning have occurred in California this season. Domoic acid has been linked to several poisonings of marine mammals along the Pacific Coast and may have caused several mild cases of human poisoning in the state of Washington.

CDPH's shellfish sampling and testing programs for PSP and DAP issue warnings or quarantines when needed. Local health departments, various state and federal agencies and others participate in the monitoring program. Consumers can receive updated information about shellfish poisoning by calling the "Shellfish Information Line" at (800) 553-4133.

Last modified on: 10/29/2010 11:30 AM

EXHIBIT

P S-05

ROUGH SEAS

EXHIBIT RS

Station 46027 Event Summaries
Wave Height (m) > 2.75

START DATE	TIME	DURATION	AVG	MAX	MIN
Dec 31,2009	2350	9 hrs	3.7	4.4	3.2
Jan 01,2010	0950	39 hrs	3.8	5.2	2.8
Jan 04,2010	2350	4 hrs	2.8	2.9	2.8
Jan 08,2010	0850	23 hrs	3.2	3.5	2.8
Jan 09,2010	0850	14 hrs	2.9	3.1	2.8
Jan 10,2010	0350	17 hrs	3.3	3.7	2.8
Jan 11,2010	0550	5 hrs	3.1	3.5	2.9
Jan 11,2010	1150	60 hrs	4.2	5.3	3.3
Jan 14,2010	0250	16 hrs	3.3	3.7	2.8
Jan 15,2010	1550	18 hrs	3.6	4.4	2.9
Jan 16,2010	1050	5 hrs	2.9	3.1	2.8
Jan 16,2010	1650	5 hrs	3.0	3.2	2.8
Jan 17,2010	1750	26 hrs	4.8	6.0	3.1
Jan 18,2010	2050	25 hrs	5.7	7.6	4.2
Jan 19,2010	2250	19 hrs	5.0	5.5	4.5
Jan 20,2010	1850	27 hrs	4.8	5.6	4.0
Jan 22,2010	1950	6 hrs	3.2	3.4	2.9
Jan 23,2010	0250	27 hrs	3.6	4.3	2.8
Jan 24,2010	1050	16 hrs	3.7	5.0	2.9
Jan 25,2010	0350	39 hrs	4.2	6.1	2.9
Jan 29,2010	0750	23 hrs	3.5	4.4	2.9
Jan 30,2010	1050	26 hrs	3.4	3.9	2.8
Jan 31,2010	1350	6 hrs	2.9	3.0	2.8
Feb 02,2010	1150	24 hrs	3.0	3.5	2.8
Feb 04,2010	2350	6 hrs	3.5	4.1	3.1
Feb 05,2010	0650	43 hrs	3.4	4.0	2.9
Feb 07,2010	0550	30 hrs	3.3	3.8	2.8
Feb 11,2010	2150	38 hrs	4.1	5.7	3.0
Feb 13,2010	1250	59 hrs	4.1	5.6	3.0
Feb 22,2010	1050	7 hrs	2.9	3.0	2.8
Feb 23,2010	2250	11 hrs	3.5	3.8	3.0
Feb 24,2010	1550	14 hrs	3.2	3.7	2.8
Feb 25,2010	0850	5 hrs	2.9	2.9	2.8
Feb 26,2010	0750	9 hrs	3.2	3.4	2.8
Feb 26,2010	1850	13 hrs	3.3	3.8	2.8
Feb 27,2010	1350	17 hrs	3.6	4.5	2.8
Feb 28,2010	1050	19 hrs	3.4	4.1	2.8
Mar 01,2010	2150	31 hrs	4.2	5.2	2.9
Mar 03,2010	0550	17 hrs	3.6	4.5	3.1
Mar 03,2010	2350	11 hrs	3.7	4.3	2.9
Mar 04,2010	1550	4 hrs	2.8	2.9	2.8
Mar 05,2010	1350	7 hrs	3.1	3.5	2.8
Mar 05,2010	2350	11 hrs	3.6	4.3	3.0
Mar 06,2010	1150	6 hrs	3.3	3.5	3.0
Mar 06,2010	2050	11 hrs	2.9	3.3	2.8
Mar 07,2010	1150	54 hrs	3.6	5.2	2.9
Mar 10,2010	0050	24 hrs	4.6	5.5	2.8
Mar 11,2010	0150	21 hrs	3.6	4.5	3.0
Mar 11,2010	2350	13 hrs	5.5	6.3	4.2
Mar 12,2010	1350	10 hrs	4.6	5.3	3.9
Mar 14,2010	0350	9 hrs	3.1	3.5	2.8
Mar 15,2010	0550	14 hrs	3.0	3.5	2.8
Mar 15,2010	2050	29 hrs	3.6	4.5	2.9
Mar 17,2010	0250	42 hrs	4.1	5.6	3.0
Mar 21,2010	1650	5 hrs	2.9	3.0	2.8
Mar 25,2010	1450	5 hrs	3.1	3.1	3.0
Mar 25,2010	2350	20 hrs	3.7	4.1	3.1
Mar 28,2010	1050	6 hrs	3.3	3.7	2.9
Mar 28,2010	1750	40 hrs	4.3	5.3	3.5

2010
Waves > 9f
= 139 days

EXHIBIT
R S-01

Mar 30,2010	1750	61 hrs	4.0	5.2	2.9
Apr 02,2010	0750	10 hrs	3.5	4.7	3.0
Apr 03,2010	0050	11 hrs	5.9	6.6	4.9
Apr 03,2010	1250	58 hrs	4.8	7.1	3.6
Apr 06,2010	1550	6 hrs	3.7	3.8	3.5
Apr 07,2010	1350	5 hrs	3.1	3.2	2.9
Apr 08,2010	1150	22 hrs	3.4	4.3	2.9
Apr 09,2010	1050	4 hrs	2.9	3.0	2.8
Apr 09,2010	1550	23 hrs	3.1	3.6	2.8
Apr 10,2010	2150	8 hrs	3.4	4.1	2.8
Apr 20,2010	2150	43 hrs	3.6	4.6	2.8
Apr 22,2010	1950	5 hrs	3.2	3.8	2.8
Apr 23,2010	0150	6 hrs	3.4	3.7	2.8
Apr 24,2010	2250	15 hrs	3.5	4.4	3.0
Apr 25,2010	1450	4 hrs	3.1	3.2	2.9
Apr 27,2010	2050	5 hrs	3.0	3.3	2.9
Apr 28,2010	0550	21 hrs	3.1	3.6	2.8
Apr 29,2010	0350	20 hrs	3.1	3.5	2.8
Apr 30,2010	0050	8 hrs	3.1	3.3	2.8
May 19,2010	1750	9 hrs	3.2	3.9	2.8
May 20,2010	0350	6 hrs	3.6	4.3	2.9
May 20,2010	1050	13 hrs	4.0	4.5	3.4
May 21,2010	0050	8 hrs	3.2	3.5	2.9
May 22,2010	0750	7 hrs	2.9	3.1	2.8
May 25,2010	0750	17 hrs	3.1	3.3	2.8
Jun 02,2010	1750	5 hrs	2.9	3.1	2.8
Jun 04,2010	1150	9 hrs	3.1	3.3	2.9
Jun 04,2010	2250	8 hrs	2.9	3.1	2.8
Jun 10,2010	0250	6 hrs	3.0	3.3	2.8
Jun 11,2010	2350	6 hrs	3.1	3.3	2.9
Jun 13,2010	0150	4 hrs	3.0	3.3	2.9
Jun 13,2010	2050	6 hrs	3.1	3.7	2.8
Jun 14,2010	0350	18 hrs	3.6	4.1	3.2
Jun 14,2010	2250	17 hrs	3.4	3.9	2.8
Jun 15,2010	1650	6 hrs	3.0	3.2	2.8
Jun 15,2010	2350	6 hrs	3.0	3.2	2.8
Jun 18,2010	0250	6 hrs	3.0	3.2	2.8
Jul 04,2010	2150	9 hrs	3.4	3.7	2.9
Jul 05,2010	0750	16 hrs	3.3	4.0	2.8
Jul 06,2010	0350	7 hrs	3.9	4.3	3.4
Jul 06,2010	1150	4 hrs	3.1	3.3	2.8
Jul 12,2010	2350	7 hrs	3.1	3.5	2.9
Jul 13,2010	0950	35 hrs	3.1	3.5	2.8
Jul 17,2010	0250	5 hrs	3.0	3.3	2.8
Jul 19,2010	2050	6 hrs	3.2	3.6	2.8
Jul 20,2010	0950	4 hrs	2.8	2.9	2.8
Jul 20,2010	2250	8 hrs	3.1	3.4	2.9
Jul 23,2010	0350	4 hrs	3.3	3.5	3.0
Jul 23,2010	1150	4 hrs	2.9	3.1	2.8
Sep 04,2010	2250	4 hrs	2.9	3.2	2.8
Sep 06,2010	0150	4 hrs	3.1	3.1	3.0
Sep 26,2010	1050	19 hrs	3.3	3.7	2.9
Sep 27,2010	1150	4 hrs	3.0	3.1	2.9
Sep 28,2010	1350	9 hrs	3.4	3.9	3.0
Sep 29,2010	0050	14 hrs	3.2	3.4	2.9
Oct 03,2010	1250	10 hrs	3.1	3.7	2.8
Oct 04,2010	0450	6 hrs	3.0	3.1	2.8
Oct 05,2010	0350	14 hrs	3.2	3.6	3.0
Oct 05,2010	1850	5 hrs	3.1	3.3	2.9
Oct 10,2010	0450	7 hrs	3.0	3.3	2.8
Oct 11,2010	0050	19 hrs	3.3	3.5	3.1
Oct 11,2010	2050	14 hrs	3.3	3.8	2.8

EXHIBIT

R S-01

Oct 22,2010	1150	11 hrs	3.1	3.8	2.8
Oct 23,2010	1650	16 hrs	3.6	4.2	2.9
Oct 24,2010	0950	9 hrs	3.3	3.8	2.8
~~Oct 24,2010~~	2250	6 hrs	5.6	5.9	5.3
Oct 25,2010	0550	17 hrs	5.6	6.4	4.7
~~Oct 25,2010~~	2350	11 hrs	5.8	6.9	4.6
Oct 26,2010	1150	25 hrs	4.0	4.8	3.0
Oct 28,2010	0650	12 hrs	3.2	3.6	2.8
Oct 29,2010	0150	20 hrs	3.2	3.6	2.8
Oct 31,2010	2250	5 hrs	3.0	3.2	2.9
Nov 02,2010	0450	14 hrs	5.4	6.6	3.6
~~Nov 02,2010~~	1950	31 hrs	4.3	6.3	3.0
Nov 06,2010	0250	7 hrs	2.9	3.1	2.8
Nov 08,2010	0150	4 hrs	2.9	2.9	2.8
~~Nov 08,2010~~	1050	16 hrs	3.1	3.6	2.8
Nov 09,2010	0350	11 hrs	3.1	3.5	2.8
~~Nov 09,2010~~	1650	6 hrs	3.2	3.9	2.8
Nov 10,2010	0050	5 hrs	3.0	3.2	2.9
~~Nov 10,2010~~	1450	5 hrs	5.1	5.5	5.0
Nov 11,2010	0050	17 hrs	4.0	5.1	2.8
Nov 12,2010	2350	11 hrs	3.5	3.9	2.9
Nov 13,2010	1150	7 hrs	3.4	3.6	2.9
Nov 17,2010	0350	10 hrs	3.4	4.0	2.9
Nov 18,2010	0850	4 hrs	3.2	3.8	3.0
~~Nov 18,2010~~	1350	41 hrs	3.5	4.1	2.8
Nov 21,2010	0750	4 hrs	3.0	3.3	2.8
~~Nov 21,2010~~	1250	9 hrs	3.2	3.6	2.9
Nov 22,2010	1250	7 hrs	3.1	3.3	2.8
Nov 23,2010	0950	23 hrs	3.8	4.8	2.9
Nov 26,2010	2250	6 hrs	2.9	3.3	2.8
Nov 27,2010	0550	8 hrs	3.0	3.3	2.8
~~Nov 27,2010~~	1450	10 hrs	3.1	3.3	2.8
Nov 28,2010	0150	4 hrs	2.9	3.1	2.8
~~Nov 28,2010~~	0650	14 hrs	3.2	3.5	2.9
~~Nov 28,2010~~	2150	9 hrs	3.1	3.5	2.9
Nov 30,2010	1950	46 hrs	3.3	4.0	2.8
Dec 07,2010	1650	62 hrs	3.6	4.4	2.8
Dec 13,2010	0350	8 hrs	3.2	3.5	2.8
Dec 14,2010	2250	36 hrs	3.7	4.5	2.8
Dec 18,2010	0950	6 hrs	3.0	3.4	2.9
~~Dec 18,2010~~	2050	56 hrs	3.7	4.8	2.8
Dec 21,2010	0550	8 hrs	3.5	3.9	3.1
~~Dec 21,2010~~	1450	6 hrs	3.2	3.4	2.9
~~Dec 21,2010~~	2150	7 hrs	3.8	4.4	3.2
Dec 23,2010	2350	5 hrs	3.0	3.4	2.8
Dec 24,2010	0750	22 hrs	3.5	4.3	2.9
Dec 25,2010	0650	10 hrs	4.7	5.1	4.1
~~Dec 25,2010~~	2350	8 hrs	3.2	3.4	3.0
Dec 26,2010	1750	6 hrs	4.0	4.1	3.8
Dec 27,2010	0050	24 hrs	3.5	4.0	3.0
Dec 28,2010	1050	21 hrs	3.4	4.4	2.9
Dec 29,2010	0850	14 hrs	4.2	5.0	3.5
~~Dec 29,2010~~	2350	26 hrs	4.0	5.0	2.8

Total Count: 174
Avg Duration: 15
Max Duration: 62
Min Duration: 4

$174 - 38 = 139$ days

EXHIBIT

R S-01

Station 46027 Event Summaries
Wave Height (m) > 2.75 and

START DATE	TIME	DURATION	AVG	MAX	MIN
Jan 01,2009	0550	4 hrs	3.0	3.2	2.9
Jan 02,2009	1450	7 hrs	3.4	3.6	3.0
Jan 02,2009	2250	14 hrs	3.0	3.8	2.8
Jan 05,2009	0750	11 hrs	3.2	3.6	2.8
Jan 05,2009	2350	33 hrs	3.4	4.0	2.8
Jan 07,2009	1150	7 hrs	3.0	3.1	2.8
Jan 08,2009	0450	8 hrs	3.0	3.2	2.8
Jan 08,2009	1350	38 hrs	3.2	3.9	2.8
Jan 11,2009	1950	9 hrs	3.0	3.4	2.8
Jan 26,2009	0150	18 hrs	3.0	3.2	2.8
Jan 29,2009	0050	5 hrs	3.0	3.1	2.9
Feb 06,2009	2150	24 hrs	4.6	5.5	2.9
Feb 07,2009	2250	11 hrs	3.6	4.1	3.1
Feb 09,2009	0450	12 hrs	3.1	3.5	2.9
Feb 09,2009	2050	9 hrs	3.2	3.6	2.8
Feb 10,2009	0650	18 hrs	3.4	4.0	3.1
Feb 11,2009	0150	13 hrs	3.5	4.2	3.0
Feb 11,2009	1850	16 hrs	5.0	6.2	4.4
Feb 12,2009	1150	11 hrs	3.6	4.4	3.0
Feb 12,2009	2350	6 hrs	2.9	3.1	2.8
Feb 13,2009	1050	9 hrs	3.9	5.4	2.8
Feb 13,2009	2350	21 hrs	3.6	4.5	2.9
Feb 15,2009	0850	8 hrs	3.5	4.4	2.8
Feb 16,2009	0050	12 hrs	2.9	3.1	2.8
Feb 16,2009	1550	9 hrs	3.2	3.4	3.0
Feb 19,2009	2250	22 hrs	3.3	4.0	2.8
Feb 22,2009	1050	6 hrs	3.2	3.4	3.0
Feb 23,2009	1650	6 hrs	3.1	3.5	2.9
Feb 24,2009	0550	18 hrs	3.3	4.1	2.8
Feb 26,2009	1350	7 hrs	3.1	3.4	2.9
Feb 27,2009	0050	13 hrs	3.0	3.2	2.8
Mar 01,2009	1350	15 hrs	3.3	3.7	2.9
Mar 02,2009	0550	12 hrs	3.7	5.0	2.9
Mar 02,2009	1950	7 hrs	3.0	3.3	2.9
Mar 03,2009	0350	5 hrs	4.0	4.4	3.6
Mar 03,2009	1050	16 hrs	4.6	5.0	4.0
Mar 04,2009	0350	19 hrs	3.3	3.8	2.8
Mar 08,2009	0050	5 hrs	2.9	3.1	2.8
Mar 08,2009	1450	41 hrs	3.7	4.6	3.0
Mar 12,2009	0150	4 hrs	2.9	2.9	2.9
Mar 15,2009	1450	9 hrs	3.4	4.0	2.9
Mar 16,2009	0750	4 hrs	3.8	4.2	3.6
Mar 16,2009	1550	42 hrs	3.6	4.7	3.0
Mar 22,2009	1050	6 hrs	3.3	3.7	2.9
Mar 22,2009	1750	21 hrs	3.5	4.1	2.8
Mar 29,2009	0650	21 hrs	3.2	3.7	2.8
Apr 03,2009	0450	27 hrs	3.4	4.1	2.8
Apr 06,2009	1250	6 hrs	2.9	3.1	2.8
Apr 13,2009	0650	9 hrs	2.9	3.0	2.8
Apr 13,2009	2050	41 hrs	3.2	4.0	2.8
Apr 18,2009	2350	5 hrs	2.9	3.1	2.8
Apr 22,2009	2050	21 hrs	3.1	3.4	2.8
Apr 23,2009	2250	9 hrs	3.1	3.5	2.9
Apr 25,2009	0050	5 hrs	2.9	2.9	2.8
May 04,2009	0050	11 hrs	3.0	3.2	2.8
May 04,2009	2050	36 hrs	3.3	4.2	2.9
May 06,2009	0950	9 hrs	2.9	3.0	2.8
May 08,2009	2150	9 hrs	3.1	3.3	2.8
May 21,2009	0050	8 hrs	3.5	3.8	2.9

2009
Waves > 9ft
= 91 days

EXHIBIT
R S-02

May 21,2009	1950	11 hrs	3.3	4.0	2.9
May 22,2009	2050	11 hrs	3.1	3.6	2.8
Jun 20,2009	0250	5 hrs	2.9	3.0	2.8
Jun 25,2009	1650	6 hrs	3.1	3.4	2.8
~~Jun 25,2009~~	2350	16 hrs	3.5	4.0	2.9
Jun 26,2009	1650	16 hrs	3.5	3.9	2.9
Jun 27,2009	2350	6 hrs	3.0	3.2	2.9
Jun 28,2009	2250	8 hrs	3.2	3.5	2.9
Jun 29,2009	1150	9 hrs	3.1	3.3	2.9
~~Jun 29,2009~~	2150	15 hrs	3.7	4.3	3.5
Jun 30,2009	1350	19 hrs	3.6	4.5	3.0
Jul 01,2009	0950	4 hrs	2.9	3.1	2.8
Jul 15,2009	0150	5 hrs	3.0	3.4	2.8
Aug 16,2009	0250	4 hrs	2.9	3.0	2.8
Aug 22,2009	1250	5 hrs	2.9	3.0	2.9
~~Aug 22,2009~~	2050	12 hrs	3.5	4.1	2.9
Aug 23,2009	2250	7 hrs	3.1	3.4	2.8
Sep 07,2009	0050	11 hrs	3.0	3.2	2.8
Sep 12,2009	0350	23 hrs	3.4	4.0	2.8
Sep 13,2009	0450	8 hrs	3.0	3.4	2.8
Sep 18,2009	0150	4 hrs	2.9	3.0	2.8
Sep 20,2009	2250	7 hrs	3.1	3.4	2.8
Sep 25,2009	0450	7 hrs	3.1	3.4	2.9
~~Sep 25,2009~~	1250	6 hrs	2.9	3.1	2.8
~~Sep 25,2009~~	2250	15 hrs	3.1	3.5	2.8
Sep 26,2009	1850	14 hrs	3.6	4.2	3.1
Sep 27,2009	0950	6 hrs	3.2	3.3	3.0
Oct 07,2009	2250	8 hrs	3.0	3.2	2.8
Oct 14,2009	0550	33 hrs	3.4	3.9	2.8
Oct 22,2009	0350	10 hrs	3.4	4.2	2.8
~~Oct 22,2009~~	1450	22 hrs	3.6	4.1	2.9
Oct 27,2009	0750	40 hrs	3.3	3.7	2.9
Nov 05,2009	0050	4 hrs	2.9	3.1	2.9
~~Nov 05,2009~~	1950	4 hrs	3.3	3.7	3.0
Nov 06,2009	0050	5 hrs	3.8	3.9	3.7
~~Nov 06,2009~~	0750	94 hrs	4.6	6.4	2.8
Nov 10,2009	0750	9 hrs	3.0	3.5	2.9
Nov 14,2009	0450	25 hrs	3.2	3.7	2.8
Nov 16,2009	1650	19 hrs	3.9	5.0	3.3
Nov 18,2009	0050	4 hrs	4.2	4.4	3.9
~~Nov 18,2009~~	0850	39 hrs	3.8	4.7	2.9
Nov 20,2009	0050	9 hrs	4.1	4.4	3.7
~~Nov 20,2009~~	1350	35 hrs	3.5	4.2	2.9
Nov 22,2009	0350	5 hrs	3.5	4.0	3.1
~~Nov 22,2009~~	1850	5 hrs	4.6	4.9	4.3
Nov 23,2009	0250	21 hrs	3.7	5.1	3.0
Nov 26,2009	0650	22 hrs	3.4	3.7	2.9
Nov 27,2009	0550	33 hrs	3.9	5.3	2.9
Nov 28,2009	2150	51 hrs	3.6	4.3	2.8
Dec 01,2009	0550	5 hrs	2.9	2.9	2.8
Dec 15,2009	0050	36 hrs	3.4	4.3	2.8
Dec 16,2009	1350	34 hrs	3.4	4.2	2.9
Dec 20,2009	2150	21 hrs	3.2	3.7	2.8
Dec 21,2009	1950	11 hrs	3.9	4.8	3.2
Dec 22,2009	0750	27 hrs	3.8	4.8	3.0
Dec 26,2009	2150	50 hrs	3.4	4.2	2.8
Dec 29,2009	2350	5 hrs	3.0	3.2	2.8
Dec 31,2009	1450	9 hrs	3.6	4.1	3.1

Total Count: 117
Avg Duration: 15
Max Duration: 94

$-26 = 91$ days

EXHIBIT

R S-02

Min Duration: 4

EXHIBIT

R S-02

Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 12-2003
APPLICABLE TO NWSI 10-310
NOVEMBER 21, 2008

Operations and Services
Marine and Coastal Weather Services, NWSPD 10-3
Coastal Marine Forecast Services, NWSI 10-310

MARINE WEATHER SERVICES

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives/.

OPR: W/WR1x4 (J. Lorens) **Certified by:** W/WR1 C. Schmidt
Type of Issuance: Emergency

SUMMARY OF REVISIONS: This directive supersedes NWS Western Region Supplement 12-2003 dated May 12, 2008.

The following changes were made in this issuance:

1. Removed VTEC references.
2. Added references to new NWS Directive, NWSI 10-315, Marine Weather Messages.

Signed 11/12/08
Robert Tibi Date
Director, Western Region

EXHIBIT

R S-03

Table of Contents: Page

1. Introduction. This regional supplement provides additional guidance and instructions for marine weather products and services including Coastal Waters Forecasts and Surf Zone Forecasts. Written instructions cannot address every situation. Operational personnel must exercise initiative and professional judgment to minimize risk to public safety and property in instances when written instructions do not provide appropriate guidance.

2. Coastal Waters Forecasts (CWF).

2.1 Preparation and Issuance. Western Region (WR) Weather Forecast Offices (WFOs) will prepare and issue Coastal Waters Forecast (CWF) products for their marine areas of responsibility, in accordance with NWSI 10-310 (Coastal Marine Forecast Services). NWSI 10-506 (Digital Data Products/Services Specification), and this Supplement. Scheduled issuance times for CWFs are: 0300/0900/1500/2100 (Local Time). CWFs will be issued no earlier than one hour prior to, but no later than scheduled issuance times. Unscheduled (updated or corrected) CWFs will be issued as necessary. Gridded marine elements will be updated as needed to ensure currency.

2.2 CWF Format. Refer to NWSI 10-310 for general CWF format.

EXHIBIT

R S-03

2.2.1 Reference to National Marine Sanctuaries. WFOs Los Angeles, San Francisco Bay Area, and Seattle will reference National Marine Sanctuaries in their areas of responsibility in the SYNOPSIS description line or in the areal description line of the Mass News Disseminator (MND).

2.3 CWF Content.

2.3.1 Synopsis. WR WFOs will include a brief synopsis discussing the dominant weather features affecting the WFOs coastal waters area of responsibility, including general trends (movement, intensification, weakening, etc.). Primary emphasis will be placed on the first 36-48 hours of the forecast, emphasizing weather features expected to result in a significant degradation or improvement of forecast conditions, particularly when marine warning/advisory thresholds are expected to be crossed.

2.3.2 Forecast Content. Refer to NWSI 10-310 for basic guidance on CWF content.

a. Waves. Except as noted, wave information will be separated into its separate components.

1. Wind wave height (feet).

2. Swell. Swell information will be included for coastal waters marine zones (0 to 60 nautical miles from the coast). Swell will not be included in inland waters marine zones (e.g. Puget Sound).

a. Swell direction and height (feet).

b. Swell period (seconds). Include swell period in the first three forecast periods only.

c. Mixed Swell. A secondary swell should also be included if it can be clearly identified. In such cases, specify the predominant swell first, then the secondary swell. Include a direction, height, and period for each swell. As general guidance, include a secondary swell if it differs from the primary swell by 90 degrees or more, the height of the secondary swell is at least half the height of the primary swell, or if it poses a special hazard (e.g. shoaling in shallower depths due to longer period).

3. Combined Seas. (Combination of swell and wind wave heights, typically synonymous with **significant wave height**). The term "combined seas" will be substituted for the combination of ***swell*** and ***wind wave*** when the two cannot be clearly distinguished.

EXHIBIT

R S-03

2.4 River/Bay Bar Forecasts. Certain areas along the California, Oregon, and Washington coasts, especially near (or at) the entrance to rivers and bays, are identified as "bars". These areas may have significantly different wave conditions than surrounding coastal waters. For these areas, specific wave forecasts and related information (e.g. tidal information), may be included in the CWF. Some river/bay bars have unique marine zones assigned to them, while others may be part of an existing coastal waters marine zone.

The following is an example of a bar forecast for a unique marine zone (a separate segment within the CWF):

PZZ210-232215-
COLUMBIA RIVER BAR-
900 AM PDT TUE SEP 23 2008

.IN THE MAIN CHANNEL...COMBINED SEAS 3 TO 4 FT THROUGH TONIGHT. SEAS WILL TEMPORARILY BUILD TO 5 FT DURING THE WEAKER EBB AROUND 1230 PM THIS AFTERNOON...AND TO 6 FT DURING THE STRONGER EBB CURRENT AROUND 100 AM EARLY MORNING.

The following is an example of a bar forecast for an area which is part of an existing coastal waters marine zone (appended to segment):

PZZ540-545-232230-
POINT ARENA TO POINT REYES TO 20 NM-
POINT REYES TO PIGEON POINT TO 20 NM-
826 AM PDT TUE SEP 23 2008

.TODAY...NW WINDS 10 TO 20 KT. WIND WAVES 2 TO 4 FT.
NW SWELL 4 TO 5 FT AT 8 SECONDS.
.TONIGHT...NW WINDS 10 TO 20 KT. WIND WAVES 2 TO 4 FT.
NW SWELL 3 TO 5 FT AT 8 SECONDS AND S 2 FT AT 14 SECONDS.
.WED...NW WINDS 5 TO 15 KT. WIND WAVES 1 TO 3 FT.
MIXED SWELL NW 2 TO 4 FT AT 9 SECONDS AND S 2 FT AT 14 SECONDS.
.WED NIGHT...NW WINDS 10 TO 20 KT. WIND WAVES 2 T0 4 FT.
NW SWELL 4 TO 6 FT AND S 2 FT. PATCHY FOG.
.THU...NW WINDS 5 TO 15 KT...INCREASING TO 15 TO 25 FT. WIND WAVES 2 TO 5 FT. NW SWELL 6 TO 9 FT. S SWELL 2 FT. PATCHY FOG.
.FRI...NW WINDS 10 TO 20 KT. WIND WAVES 2 TO 4 FT.
NW SWELL 5 TO 7 FT AND S 2 FT. PATCHY FOG.
.SAT...NW WINDS 10 TO 20 KT. WIND WAVES 2 TO 4 FT.
MIXED SWELL NW 3 TO 5 FT AND S 2 FT. PATCHY FOG.

.....SAN FRANCISCO BAR/FOURFATHOM BANK FORECAST.....

.IN THE DEEP WATER CHANNEL...COMBINED SEAS 4 TO 6 FEET WITH A DOMINANT PERIOD OF 9 SECONDS.

EXHIBIT

.ACROSS THE BAR...COMBINED SEAS 6 TO 7 FEET WITH A DOMINANT PERIOD OF 9 SECONDS. SEAS TO 9 FEET DURING MAXIMUM EBB CURRENT OF 0.8 KNOTS AT 11:47 AM THIS MORNING AND 2.0 KNOTS AT 11:48 PM TONIGHT.

2.5 Marine Watches, Warnings, Advisories and Associated Headlines. Small Craft Advisories for Hazardous Sea and Hazardous Sea Warnings are based in part on wave steepness. See Appendix A for WR WFO wave steepness criteria. Headlines associated with marine watches, warnings, and advisories are automatically inserted into the CWF via the CWF formatter. For more general guidance concerning marine watches, warnings, advisories, and associated headlines, refer to NWSI 10-315 (and Western Region Supplement).

3. Surf Zone Forecasts (SRF). See NWSI 10-310 for general information and guidance on the SRF. WFOs which do not routinely provide rip current outlook information may include this information in High Surf Advisories/Warnings, Coastal Flood Advisories / Warnings / Watches (CFW) (Ref: NWSI 10-320 and WR Supplement), and the Hazardous Weather Outlook (Ref: NWSI 10-517 and WR Supplement). For WFOs routinely issuing SRFs, High Surf and Coastal Flood Advisories / Warnings / Watches should be headlined in the SRF. Additionally, WFOs routinely issuing SRFs will include a headline in the SRF whenever the risk of rip currents is "HIGH".

3.1 Issuance. In WR, the SRF will be issued daily at **0200 and 1400 (Pacific Local Time)**. The SRF is intended to be issued on a scheduled basis only, but may be updated at WFO discretion if conditions change significantly. The SRF may be issued up to 30 minutes prior to, but not later than the scheduled issuance times. During unusually heavy workload situations, the SRF may be issued up to 1 hour prior to the scheduled issuance time.

3.2 Format. WR WFOs will use the format as indicated in Figure 1. See Appendix B for an example SRF.

3.3 Content. SRFs issued by WR offices will contain the following elements:

a. Rip Current Risk. Use "LOW" or "HIGH" (reference: NWSI 10-310). Forecasters may also use "MODERATE" if they are sufficiently confident.

b. Surf Height (Approximate height of breaking waves). For swell information, SRFs may reference the local WFOs Coastal Waters Forecast (CWF).

c. Surf (Water) Temperature. Specify appropriate range (degrees F).

4. Forecast Collaboration. WFOs routinely collaborate with adjacent offices and with the Ocean Prediction Center (OPC), as necessary during the forecast process to facilitate or improve consistency of marine forecasts, watches, warnings, and advisories. Forecasters will use available means for collaboration (chat software, telephone, intersite coordination tools (IFPS/ISC), etc.).

EXHIBIT

R S-03

Figure 1. Surf Zone Forecast (SRF) Format

```
FPZUS KXXX ddhhmm
SRFXXX

SURF ZONE FORECAST
NATIONAL WEATHER SERVICE CITY STATE
time am/pm LT day mon dd yyyy

.FOR THE BEACHES OF (specify area)...for (day)...

* THE FOLLOWING INFORMATION APPLIES WHEN FORECAST RIP CURRENT POTENTIAL IS
"LOW":  DUE TO HIGHLY VARIED COASTAL TOPOGRAPHY DANGEROUS RIP CURRENTS ARE
ALWAYS A POSSIBILITY ALONG THE SOUTHERN CALIFORNIA COAST..AND SWIMMERS
ARE URGED TO USE CAUTION AT ALL TIMES.

CAZXXX-XXX>XXX-ddhhmm-
Counties
time am/pm day mon dd yyyy

...(HEADLINES as needed)...

.TODAY...
SURF HEIGHT.....(specify height in ft)
RIP CURRENT POTENTIAL.....(LOW or HIGH)*
WATER TEMPERATURE.....(specify in degrees F)

REMARKS.....(as needed)
OUTLOOK FOR (following day)...(outlook for surf height)

$$
CAZXXX-XXX>XXX-ddhhmm-
Counties
time am/pm day mon dd yyyy

...(HEADLINES as needed)...

.TODAY...
SURF HEIGHT.....(specify)
RIP CURRENT POTENTIAL.....(LOW or HIGH)*
WATER TEMPERATURE.....(specify in degrees F)

REMARKS.....(as needed)
OUTLOOK FOR (following day)...(outlook for surf height)

$$
```

EXHIBIT

R S-03

APPENDIX A - Wave Steepness Criteria (Note: The tables below are for information. Individual WFOs may utilize more detailed local tables with additional information. "Swell Height" and "Swell Period" may be used for "Wave Height: and "Wave Period" as needed).

WFO Seattle, WA

		Wave Period (Seconds)						
		<=7	8	9	10	11	12	>=13
Wave Height (feet)	<=5							
	6							
	7							
	8							
	9							
	10							
	11							
	>=12							

Small Craft Advisory for Hazardous Seas

None

WFO Portland, OR

		Wave Period (Seconds)						
		<=7	8	9	10	11	12	>=13
Wave Height (feet)	<=5							
	6							
	7							
	8							
	9							
	10							
	11							
	>=12							

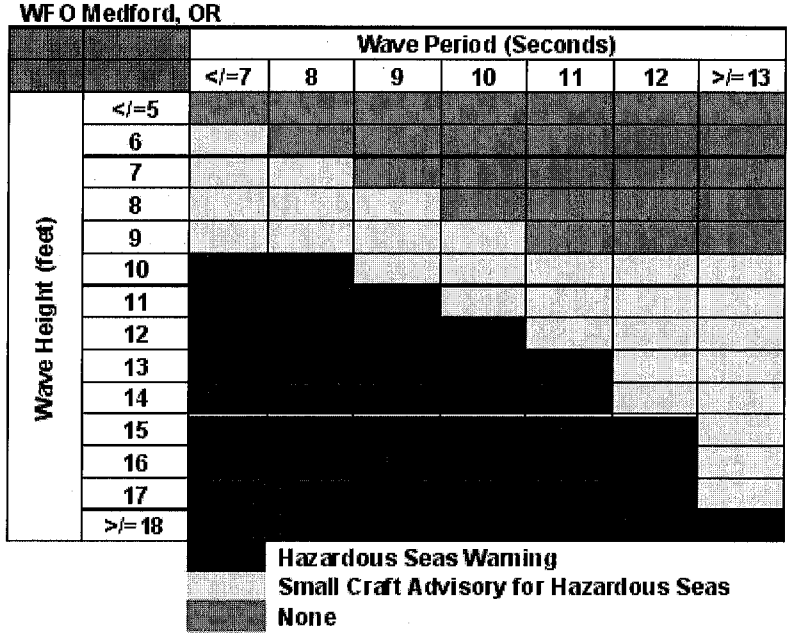
Small Craft Advisory for Hazardous Seas

None

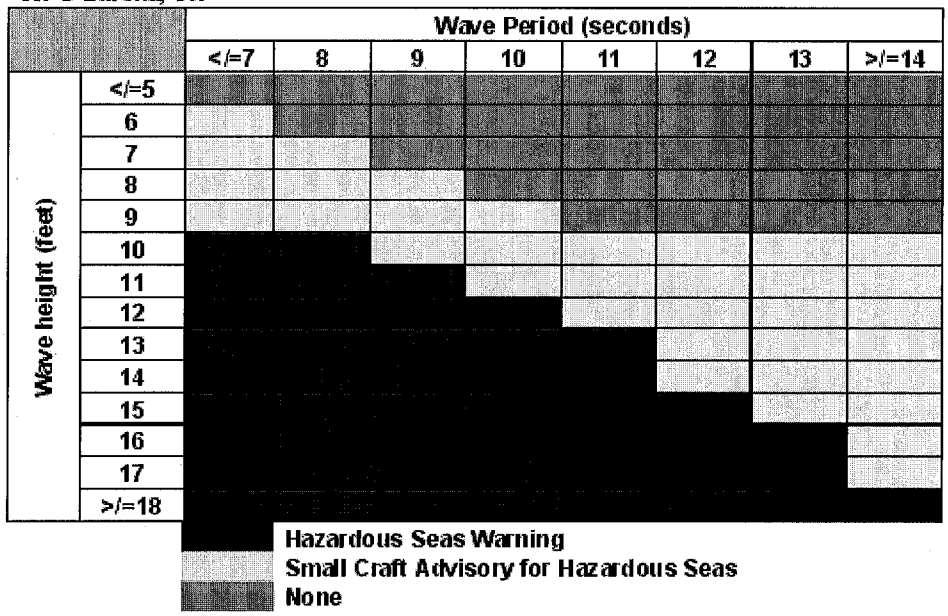
EXHIBIT

R S-03

WFO Medford, OR



WFO Eureka, CA



EXHIBIT

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WFO Monterey, CA

Wave Height (feet)	Wave Period (Seconds)									
	<=6	7	8	9	10	11	12	13	14	>=15
<= 5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
>= 15										

Small Craft Advisory for Hazardous Seas
None

WFO Los Angeles/Oxnard, CA

Wave height (feet)	Wave Period (seconds)							
	<=5	6	7	8	9	10	11	>=12
<=5								
6								
7								
8								
9								
10								
>=11								

Small Craft Advisory for Hazardous Seas
None

WFO San Diego, CA

Wave Height (feet)	Wave Period (Seconds)							
	<=5	6	7	8	9	10	11	>=12
<=5								
6								
7								
8								
9								
10								
>=11								

Small Craft Advisory for Hazardous Seas
None

EXHIBIT

R S-03

APPENDIX B - Example Surf Zone Forecast

FZUS56 KLOX 230900
SRFLOX

SURF ZONE FORECAST
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
200 AM PDT TUE SEP 23 2008

.FOR THE BEACHES OF SOUTHERN CALIFORNIA...VALID TUE SEP 23...

* THE FOLLOWING INFORMATION APPLIES WHEN FORECAST RIP CURRENT POTENTIAL IS "LOW": DUE TO HIGHLY VARIED COASTAL TOPOGRAPHY, DANGEROUS RIP CURRENTS ARE ALWAYS A POSSIBILITY ALONG THE SOUTHERN CALIFORNIA COASTS, AND SWIMMERS ARE URGED TO USE CAUTION AT ALL TIMES.

CAZ041-232900-
LOS ANGELES COUNTY COAST-
200 AM PDT TUE SEP 23 2008

.TODAY...
SURF HEIGHT.....1-2 FEET
RIP CURRENT POTENTIAL.....LOW*
WATER TEMPERATURE.....61-69 DEGREES

REMARKS...MIXED SOUTH SWELL AND NORTHWEST WIND SWELL. OCCASIONAL 3 FEET EXPOSED SOUTH AND SOUTHWEST FACING SHORES.

OUTLOOK FOR WEDNESDAY...LITTLE CHANGE.

$$

CAZ040-232100-
VENTURA COUNTY COAST-
200 AM PDT TUE SEP 23 2008

.TODAY...
SURF HEIGHT.....1-2 FEET
RIP CURRENT POTENTIAL.....LOW*
WATER TEMPERATURE.....62-68 DEGREES

REMARKS...MIXED SOUTH SWELL AND NORTHWEST WIND SWELL. OCCASIONAL 3 FEET EXPOSED SOUTH AND SOUTHWEST FACING SHORES.

OUTLOOK FOR WEDNESDAY...LITTLE CHANGE

$$

EXHIBIT

R 5-03

CAZ039-232100-
SANTA BARBARA COUNTY SOUTH COAST-
200 AM PDT TUE SEP 23 2008

.TODAY...
SURF HEIGHT.....1-2 FEET
RIP CURRENT POTENTIAL.....LOW*
WATER TEMPERATURE.....59-66 DEGREES

REMARKS...NONE

OUTLOOK FOR WEDNESDAY...LITTLE CHANGE

$$

EXHIBIT

R S-03

TURBIDITY

EXHIBIT T

California's Living Marine Resources:
A Status Report

The Resources Agency
The California Department of Fish and Game

California Governor Gray Davis
Resources Secretary Mary D. Nichols
Department of Fish and Game Director Robert C. Hight
Marine Region Manager Patricia Wolf

Editors

William S. Leet
Christopher M. Dewees
Richard Klingbeil
Eric J. Larson

EXHIBIT

T - 0 1

F-132

California's Offshore Ecosystem

Far from the coast, California's offshore ecosystem consists of the open ocean environments over the deeper parts of the continental shelf, the continental slope, and ocean basins. This ecosystem is most often characterized by a deep luminous blue color, due to scattered light encountering fewer particles and dissolved substances than are found in rich coastal waters, where suspended sediment, marine organisms, and other material can absorb light and cause greenish or brownish colors.

California's offshore waters are dominated by the California Current, a relatively shallow, broad (approximately 300 km), and slow moving current. This current generally moves from north to south along the West Coast of North America, transporting cooler water toward the equator. Along our state, the California Current hugs the coast north of Point Conception during most of the year, except in winter when southeast winds force it farther offshore, producing the Davidson Current that flows north near the coast. In some years, this counter current is stronger than normal and is forced as far north as British Columbia, Canada. South of Point Conception, in the Southern California Bight, the coast bends sharply to the east. There the California Current breaks away from the coast and flows offshore along the continental edge until it swings back toward the mainland south of San Diego. In the Southern California Bight, the usual surface flow, called the California Countercurrent, moves north along the coast resulting in a counterclockwise gyre that mixes offshore and nearshore surface waters off southern California.

Off California, prevailing winds, most often from the north or northwest, blow surface waters away from the coast and nutrient laden subsurface waters are drawn up to replace them in a process called upwelling. California is in one of the major coastal upwelling regions of the world, with the most intense upwelling occurring during the summer near Cape Medocino in northern California. Productivity of marine plants is high along coasts with these features, and some of the largest fish populations are associated with productive coastal upwelling systems.

Although the offshore environment is generally less variable than nearshore and estuarine ecosystems, the California Current is a dynamic system with considerable inter-annual variation. Relatively short-term, dramatic events like El Niño (warmer water) and La Niña (cooler water) cause larger temperature changes, variation in productivity, and occurrences of organisms beyond their usual ranges. Long-term temperature regimes, periods of slightly warmer or cooler conditions that persist for decades, can affect reproduction and recruitment of marine species like sardines and rockfish for several generations and result in substantial changes in abundance over time.

The offshore ecosystem is home to groundfish species (shelf and slope rockfish, flatfish, sablefish, and Pacific whiting); coastal pelagic species (sardines, anchovy, mackerel, and squid); salmon during the ocean phase of their life-cycle; highly migratory species (tuna, billfishes, and pelagic sharks); marine mammals (such as whales and dolphins), pelagic seabirds (including albatross and shearwaters); phytoplankton; and zooplankton (including euphausids, copepods, salps, and occasionally red crabs). These species respond to the environmental variability in the California Current in different ways. The abundance and landings of coastal pelagic fish stocks such as sardines vary considerably due to environmental fluctuations, particularly temperature. Such highly fecund and fast growing species undertake extensive migrations as far north as British Columbia, when their population is large, to feed in upwelling areas and they tend to concentrate spawning in areas like the Southern California Bight, perhaps to help retain larvae in coastal habitats where they are less likely to be swept offshore by the strong offshore transport conditions of major upwelling centers. Highly migratory species like albacore make long trans-Pacific migrations and actively seek productive areas and avoid unfavorable conditions. Long-lived, slow growing and moderately fecund species such as rockfish persist by maintaining many reproductive age classes through periods of unfavorable environmental conditions.

The most significant challenge to effective management of fisheries for these species is the lack of understanding of the interactions among environmental variability, recruitment fluctuations, and fishing pressure. The current management strategy for sardines, a species that has recovered over the last 20 years from extraordinarily low levels in the 1950s through the 1970s, now takes temperature into account because of its effect on sardine productivity. In the last two years, seven species of groundfish have been designated as overfished and will require many years and special management efforts to recover. In retrospect, this occurred primarily as a result of our poor understanding of the relatively low productivity of these species, particularly low recruitment for many of these species over the last three decades, and resulting harvest levels that were inadvertently set too high.

Populations of many fish species in the offshore ecosystem extend along the entire or a major portion of the west coast, and so their fisheries cross state and sometimes national boundaries. To ensure coordination and more effective coast-wide management, coastal pelagic species, groundfish, highly migratory species, and ocean salmon are regulated by the Pacific Fishery Management

Council, a regional body of states (California, Oregon, Washington, and Idaho), tribal representatives, and federal agencies that has authority for West Coast fisheries in offshore waters. For those species we share with Mexico (coastal pelagic species and some highly migratory species), no formal bilateral management agreement exists.

Patricia Wolf
California Department of Fish and Game

EXHIBIT

T - 0 1

Pacific Southwest

Publication Information

Title: The Eel River, northwestern California; high sediment yields from a dynamic landscape

Author: Lisle, Thomas E.

Date: 1990

Source: In: M.G. Wolman and H.C. Riggs (ed.), Surface Water Hydrology, v. O-1, The Geology of North America, Geological Society of America. p. 311-314.

Description: The Eel River draining the Coast Range of northwestern California has the highest recorded average suspended sediment yield per drainage area of any river of its size or larger unaffected by volcanic eruptions or active glaciers in the conterminous United States (1,720 t/km 2 yr from 9,390 km 2 ; Brown and Ritter, 1971).

Keywords: PSW4351, erosion, sediment transport, California, suspended sediment, sediment transporting porcess, hillslopes, channels, geology, hydrology, geomorphic

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US Forest Service - Research & Development
Last Modified: June 28, 2010

EXHIBIT

T - 02

THE EEL RIVER, NORTHWESTERN CALIFORNIA; HIGH SEDIMENT YIELDS FROM A DYNAMIC LANDSCAPE

Thomas E. Lisle

The Eel River draining the Coast Range of northwestern California has the highest recorded average suspended sediment yield per drainage area of any river of its size or larger unaffected by volcanic eruptions or active glaciers in the conterminous United States (1,720 t/km^{2}yr from 9,390 km^2; Brown and Ritter, 1971). These high rates of erosion and sediment transport result from a combination of widespread tectonic deformation of the underlying rocks, recent rapid uplift of the landscape, high seasonal rainfall, and widespread disruption of the ground surface by man in the last century. Not surprisingly, the basin has some unusual geomorphologic characteristics. Sediment-transporting processes on hillslopes and in channels are closely linked, and as a result, high-magnitude, low-frequency climatic events are more responsible for forming channels than in most other areas.

BASIN CHARACTERISTICS

Geology

The Eel River basin is underlain almost entirely by the Franciscan assemblage of complexly deformed, continental margin deposits of Late Jurassic to mid-Tertiary age (Bailey and others, 1964; Jones and others, 1978). The area has undergone uplift since mid-Miocene time (Bailey and others, 1964). Franciscan rocks are predominantly sandstone and shale, but also include tectonically emplaced blocks of volcanics and low-grade metamorphic rock. Bedrock has been pervasively sheared to various intensities over the basin. Zones of weakness trending generally north-northwest have created a trellis network of drainages. Narrow, deeply cut canyons incised below moderately dipping upper slopes, on which older soils are developed, attest to recent or ongoing uplift of the area, although local downwarping has formed isolated depositional basins in the Eel valley (Kelsey, 1982).

Hydrology

The Mediterranean climate of the area is conducive to the production of high sediment yields. Annual precipitation is heavy (averaging 1,500 mm basinwide and 2,800 mm at high elevations) and seasonal, with 90 percent falling between October and April. During winter, northern California has the highest latitudinal temperature gradients of any area in the Pacific Northwest (Janda and Nolan, 1979). This produces intense storms that commonly travel perpendicular to the trend of the Coast Range, which are as high as 2,000 m in the Eel basin. As a result, large cyclonic storms lasting several days have produced widespread rainfall totaling more than 250 mm on several occasions in the last 40 years (Harden and others, 1978).

Runoff from the basin, averaging 890 mm annually, is highly variable because of seasonality of rainfall, infrequent large storms, and poor retention of water in the basin. At Scotia (Fig. 24), the discharge equaled or exceeded 99 percent and 1 percent of the time equals 0.0004 $m^3sec^{-1}km^{-2}$ and 0.8 $m^3sec^{-1}km^{-2}$, respectively (Rantz, 1972). Most importantly from a geomorphic standpoint, large flood flows are generated by moderately intense rain falling over the entire basin for a number of days and, in some cases, by snowmelt during warm winter storms (Harden and others, 1978). Little flood runoff is stored in the basin due to the steep slopes and constricted valley bottoms.

Sediment yield

High suspended-sediment discharges from this area result from a combination of high sediment concentrations (averaging 3,000 ppm over discharge at Scotia; Holeman, 1968) and, particularly, high rates of runoff (Janda and Nolan, 1979). Gullying and mass movement accelerated by human disturbance of the erodible terrain provide inexhaustable supplies of fine sediment that can be carried quickly to stream channels (Nolan and Janda, 1982). With increasing precipitation, there is greater surface erosion of broken ground in active earthflows and on soil bared by grazing, timber harvesting, and road building. Also, increasing soil moisture and erosion of toes of streamside slides and earthflows can accelerate mass movement directly into channels. Finally, high annual precipitation in the basin does not promote a denser protective cover of vegetation than in areas with less precipitation. Little of the precipitation falling in winter can be utilized for plant growth, and under natural conditions the basin is already well vegetated except on steep hillslopes along downcutting channels. As a result, sediment discharge increases with annual precipitation in the Coast Range (Janda and Nolan, 1979), unlike most other areas (Langbein and Schumm, 1958; Wilson, 1973).

Also unlike most areas, suspended sediment discharge per unit area in the Eel River increases with basin size (Brown and Ritter, 1971; Janda and Nolan, 1979). Because of ongoing uplift, main channels are commonly more deeply incised than their tributaries, and so streamside landslides, which are major sources of sediment, are particularly abundant along main channels. Parent material is generally soft and friable, and thus, bed particles rapidly break down into smaller sizes (Knott, 1971). Consequently, suspended-sediment load increases downstream at the expense of bedload (Brown and Ritter, 1971).

VARIATIONS IN GEOMORPHIC FORMS AND PROCESSES

The geologic complexity and youthfulness of the landscape are reflected in the variety of hillslopes and channels. Lithology and the degree of fracturing of the bedrock control local erosion rates, erosional landforms, and channel morphology (Janda, 1979).

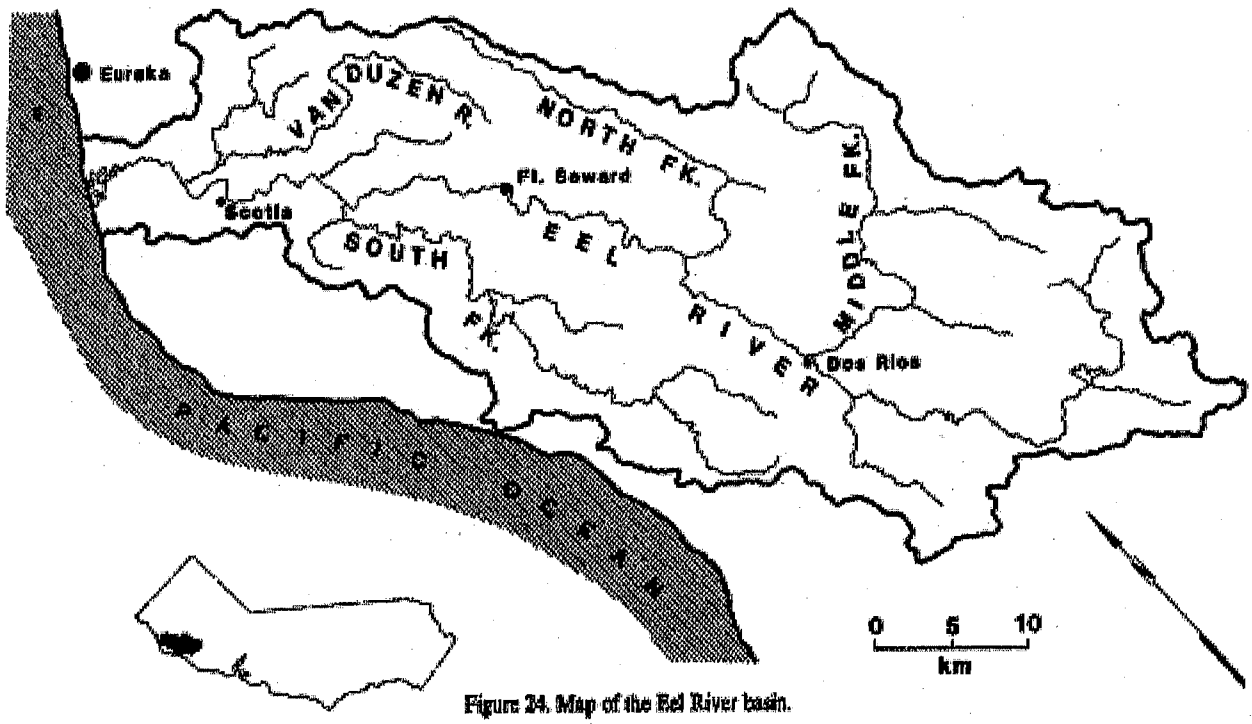

Figure 24. Map of the Eel River basin.

Mélange terrain

Highly fractured mélange units in the middle reaches of the Eel and Van Duzen basins contain abundant streamside slumps and earthflows that directly contribute large volumes of sediment to channels (Brown and Ritter, 1971; Kelsey, 1980). Estimated average annual sediment yield from a stream draining an earthflow is 24,000 t/km^2 (Kelsey, 1980)-about ten times that for the Eel basin as a whole. Sixty-eight percent of the suspended sediment discharge of the Eel River upstream of Scotia comes from 36 percent of the basin-the reach between Dos Rios and the junction with the South Fork (Fig. 24) - which contains the greatest areas of mélange, earthflows, and streamside slides (Brown and Ritter, 1971).

Most of the sediment from mélange terrain is sand or finer material eroded from toes of earthflows (Nolan and Janda, 1989) and from gullies cut on steep and disrupted hillslopes (Kelsey, 1980). However, earthflows that impinge on channels can contribute blocks of exotic material as large as 10 m and more in diameter and create extremely narrow, steep, coarse channels. These constrictions have led to the formation of depositional reaches upstream that have wide, alluvial channels and gentler streamside slopes. The alternation of these contrasting reaches produces large-scale steps in longitudinal channel profiles (Kelsey, 1980).

Competent terrain

Areas of more competent, graywacke sandstone are generally forested, have lower mass transport rates than mélange terrain, and contain "V"-shaped valleys with steep straight hillslopes. Debris slides and avalanches are the predominant sediment sources. These contribute abundant coarse material to channels, but maximum particle size is smaller than that from earthflows. Stream gradients are not unusually steep, and most coarse material entering from hillslopes can be transported downstream during annual floods. Average annual sediment yield from stable forested basins is estimated at 300 t/km2 (Janda and Nolan, 1979; Kelsey, 1980)-only about one-tenth of the average for the Eel basin.

Effect of land use

Although soils are generally permeable and stable on slopes less than 30° (Brown and Ritter, 1971), disturbance of the ground cover can greatly accelerate surface and mass erosion in both stable and unstable areas. Despite the low population density, large areas of the basin are affected by grazing, timber harvesting, or associated road construction. Loss of tree-root strength in uncohesive soils (Ziemer, 1981) has probably helped to destabilize clearcut hillslopes; grazing and the replacement of native perennial grasses by European annuals with shallower roots has probably increased gullying of grasslands (Kelsey, 1980). Anderson (1970) estimated that intensive timber harvesting and associated road building from about 1950 to 1975 increased sediment yields several fold. Nolan and Janda (1981) measured a 10-fold increase in suspended-sediment discharge from tractor-yarded clearcuts in tributaries of Redwood Creek. The coincidence of concentrated timber harvesting and a series of large floods, how

ever, makes it difficult to separate the effects of these two impacts on erosion and sediment yield (Harden and others, 1978; Kelsey, 1980).

EFFECTIVENESS OF LARGE FLOODS IN SHAPING THE LANDSCAPE

Several authors have concluded that high-magnitude, infrequent floods have a greater impact on the landscape relative to smaller floods in northwestern California than in other areas (Janda and Nolan, 1979; Kelsey, 1980; Lisle, 1981; Nolan and Marron, 1985). During the flood of December 1964, rainfall recorded at more than 550 mm during 48 hr in some locations produced stages in the Eel River 2 to 5 m above previous records (Waananen and others, 1971; Brown and Ritter, 1971). Peak flood discharge of the Eel River near its mouth was 26,500 m^3sec^{-1}, corresponding to runoff rates of 2.82 $m^3sec^{-1}km^{-2}$. This flood ranks among some of the world's great recorded floods for a basin of this size (Wolman and Gerson, 1978). Kelsey (1980) estimated the recurrence interval of the 1964 flood in the Van Duzen River, a major tributary, at approximately 100 yr. The flood caused profound changes in sediment transport rates and long-lasting changes in hillslopes and channels. Some morphologic changes persist today.

Sediment transport by large floods

Large, infrequent flows transport a relatively large proportion of sediment in the Eel River. At three gaging stations in the basin, discharges below which 90 percent of the suspended sediment load is carried have recurrence intervals between 3 and 16 years (Nolan and others, 1987). At these stations, the proportion of sediment carried by discharges of given frequencies increases with decreasing frequency of discharge and reaches a node at moderate frequencies (recurrence interval of 1.2 to 1.6 yr), as observed in other regions. The proportion remains high for infrequent discharges at the Van Duzen station, however, and increases again with further decrease in discharge frequency at the Fort Seward and Black Butte River stations. At Black Butte River, a major tributary upstream of Dos Rios, the greatest proportion of load has been transported by the most infrequent discharges.

During the 1964 flood, 105 million tonnes of suspended sediment were transported past Scotia during a 3-day period, compared to 85 million tonnes transported during the previous 8 years (Brown and Ritter, 1971). The flood accounted for 7 percent of the total sediment discharge of the Van Duzen River during a 35-yr period, and mobilized as much bed load as moves out of the basin in a century (Kelsey, 1980). Suspended-sediment concentrations at a given discharge increased several-fold and remained high for 2 to 5 years after the flood (Anderson, 1970; Knott, 1971).

Effects on channels and hillslopes

One reason why large floods are so important in shaping stream channels in the Coast Range is that material mobilized from landslides during large storms is commonly carried directly to stream channels instead of to lower hillslope sites or valley flats. Air photos of the basin taken before and after the 1964 flood (Fig. 25) show increased incidence of new landslides and long reaches of greatly widened channels (Brown and Ritter, 1971; Kelsey, 1977). For instance, the length of stream banks affected by debris avalanches increased 423 percent in the upper portion of the Van Duzen basin and 119 percent in the lower portion (Kelsey, 1977). Voluminous coarse debris from debris avalanches and torrents led to widespread channel braiding, channel widening commonly more than 100 percent, and aggradation more than several meters in some reaches (Hickey, 1969; Brown and Ritter, 1971; Knott, 1971; Kelsey, 1977). In areas where landslides were voluminous, aggradation and channel-widening downstream caused additional streamside failures by erosion of supporting material at the base of hillslopes (Kelsey, 1977; Janda and Nolan, 1979).

In addition to widening, channels adjusted to the increased sediment load by reducing bar-pool bed topography and thereby reducing hydraulic friction (Lisle, 1982). As a result, velocity increased and depth decreased at a given discharge, signifying an increase in bed-load transport capacity (Knott, 1971; Lisle, 1982). These adjustments may have accelerated the flushing of excess material from the channel networks. Associated changes in aquatic habitat may have contributed substantially to the decline in populations of anadromous salmonids in the basin (California Department of Water Resources, 1974).

Channel recovery

The 1964 flood appears to have been effective in shaping stream channels of the Eel basin, according to Wolman and Gerson's (1978) criteria, because the changes have persisted in some reaches up to the present (Lisle, 1981; Kelsey and Savina, 1985). In some reaches, channel patterns and flood deposits along the higher margins of channels will be altered little until a flood of equal or greater magnitude recurs (Kelsey, 1977).

Channels have recovered in overlapping stages dependent on a sequence of processes. First, suspended-sediment concentrations declined to pre-flood levels within about 5 years. Second, as excess bed material has been transported downstream, channel beds have degraded to stable levels at or above pre-flood elevations over periods of a few years or longer, and some reaches may remain aggraded into the next century (Kelsey, 1980; Kelsey and Savina, 1985; Lisle, 1981). These periods depend apparently on the volume and coarseness of aggraded material, channel gradient, and distance from sediment source. During channel-bed degradation, hydraulic geometries have recovered to some degree

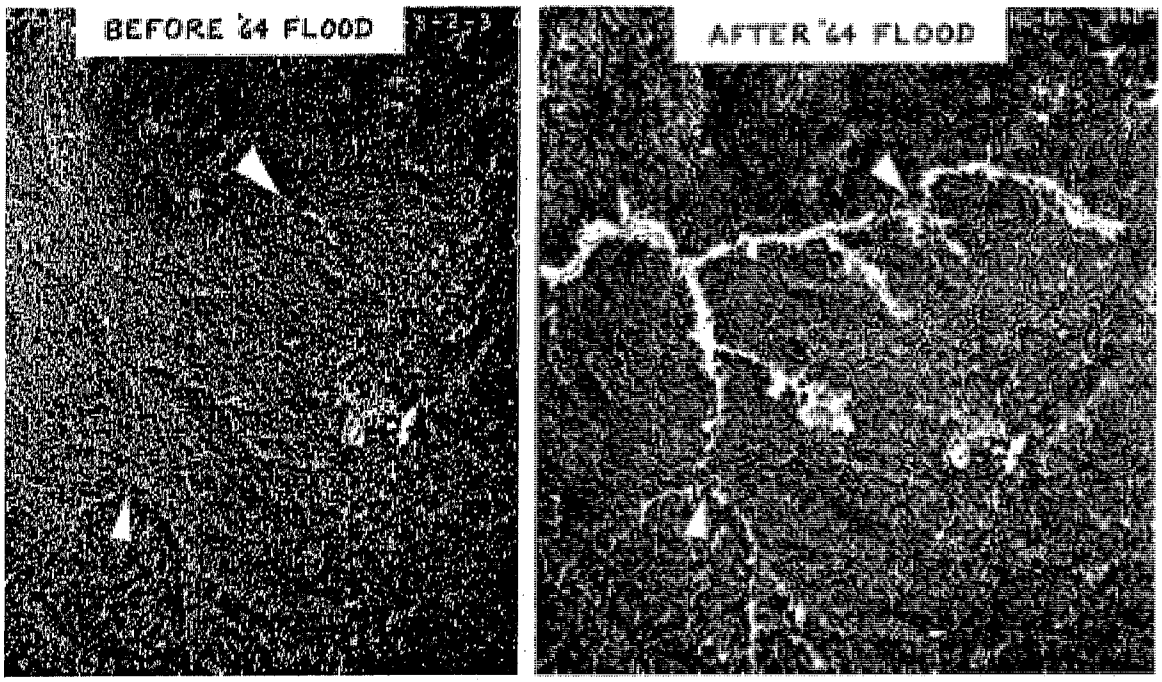

Figure 25. Aerial photographs taken in summers of 1963 and 1966 of the headwaters of the South Fork Van Duzen River, showing changes due to the 1964 flood. (From Kelsey, 1977, with permission). The white arrows identify the same channel reaches on both photos. Lighter areas in the 1966 photo were devegetated by debris avalanches, debris torrents, and widened, aggraded stream channels.

to pre-flood relations. The degree of recovery apparently depends on reestablishment of pre-flood channel widths (Lisle, 1982)--the third phase of channel recovery. Channels in alluvial reaches have incised into flood deposits, leaving a narrower channel bounded by sparsely vegetated flood deposits. Many tributary channels that are bounded on at least one bank by bedrock or colluvium have remained wide, however. Soil creep and dry ravel can be slow in replacing eroded banks, and new bank material is frequently scoured by high flows contained in narrow valley bottoms (Lisle, 1981). Riparian vegetation (primarily red alder and willow), which aids bank accretion along low-flow channel margins, is also subject to scour during high flows. Riparian trees are now well established along many reaches, however, due to the absence of large floods since 1975.

CONCLUSIONS

Erosive bedrock, rapid uplift, high seasonal rainfall, and recent disturbance by man have produced exceptionally high sediment yields from the Eel River basin. Because channels are commonly bounded by hillslopes in narrow valleys, channel morphology and sedimentology are strongly influenced by adjacent hillslope processes, which vary with the lithology and degree of shearing of bedrock. Because of the close linkage between channel and hillslope processes and the occurrence of high runoff events, large floods produce and transport a large proportion of fluvial sediment and cause widespread, persistent changes in channels. Subsequent remolding of channels by smaller discharges proceeds with the transport of excess sediment out of channels and the reconstruction of streambanks. These sequences of channel recovery can require as long as several decades.

Continental Shelf Research
Volume 25, Issue 3, February 2005, Pages 311-332

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River sediment flux and shelf sediment accumulation rates on the Pacific Northwest margin

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Received 26 April 2004; revised 30 September 2004; accepted 7 October 2004. Available online 25 November 2004.

Abstract

To test the generality of insight obtained from recent STRATAFORM studies of northern California's Eel margin, river sediment sources and continental shelf sinks were examined on the Pacific Northwest margin from 38° to 44.5° N. River discharge and sediment concentration data acquired by the US Geological Survey were used to update long-term annual suspended-sediment loads for 17 rivers that range in basin area from 635 to ~22,000 km^2. Resulting annual load estimates vary over 3 orders of magnitude (0.065–18×10^9 kg/yr), with major suspended-sediment fluxes supplied by, in decreasing order, the Eel, Klamath/Trinity, Mad, Rogue, Umpqua and Russian rivers. Down-core profiles of excess ^{210}Pb and ^{137}Cs were used to estimate sediment accumulation rates (SARs) at prescribed depths (70 and 110 m) and distances (0–40-km north and south along-shelf) from each of the major rivers. SARs were found to vary much less than the river flux estimates, and are mostly in the range of 1.5 to 6 mm/yr. Most significantly, shelf SARs on the other Pacific Northwest margins are only slightly less than those observed on the Eel shelf, implying that much higher proportions of riverine sediment are retained on those shelves. Likely reasons that the Eel dispersal system exhibits greater off-shelf transport are (1) the narrower and steeper shelf geometry, and (2) the existence of a newly documented cross-isobath sediment transport mechanism that involves wave-modulated fluid mud flows. Testing whether the fluid mud flows are a consequence of the Eel River basin's high sediment yield, and are thus unique to the Eel, or are caused by intense wave energy during discharge events, and hence are operative on many other margins, awaits future bottom-boundary layer measurements.

Keywords: Sedimentation; Continental shelves; River discharge; USA; Eastern Pacific

Article Outline

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Sediment-transport events on the northern California continental shelf

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Abstract

A long-term monitoring tripod has been maintained in 60-m water depth at the northern end of the STRATAFORM study site on the northern California continental shelf. As part of this ongoing study, tripod data for 1 year beginning 24 September 1995 are used to provide a sediment-transport analysis on an event-by-event basis. The objective of this paper is to highlight the energetic nature of this shelf region in terms of the frequency, duration, and magnitude of sediment-suspension events and the associated particle flux. Analyses are based on measurements from two current meters and two optical backscatterance sensors located at 30 and 100 cm above the bed. Data from these instruments and a pressure sensor were averaged over 7.5 min every hour. During the year of record, 41 distinct sediment-suspension events occurred (i.e., sustained suspended-sediment concentrations greater than 20 mg/l above background level at 100 cm above bed). Suspended-sediment events were associated with significant wave activity, tidal currents, and river discharge. The average duration of a sediment-suspension event was 3.1 days and varied from 0.7 to 8 days. During events, mean suspended-sediment concentrations of 110 mg/l were observed with peak hourly observations exceeding 1000 mg/l. Concentrations between events averaged 35 mg/l. The overall sediment flux for the period of record was directed seaward and southward. The distribution and magnitude of sediment-suspension events and particle flux showed a strong seasonality. For example, of the sediment transport during events, 98% of the net along-shelf, and 73% of the net across-shelf sediment transport occurred in the winter. Three major winter storms could account for 72% of the total along-shelf transport but only 10% of the across-shelf transport. The across-shelf flux was more evenly distributed over the year and occurred as a result of mean currents and very low-frequency seaward flows associated with mesoscale circulation patterns.

Author Keywords: suspended sediment; sediment flux; continental shelf; cross margin

Article Outline

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YUROK DATA

EXHIBIT YD

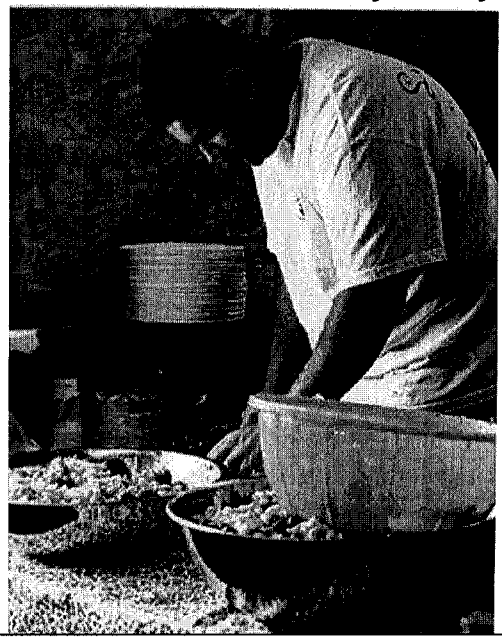
Comparison of U.S. Census Data: Yurok Reservation, Counties, State, and Nation										
	Yurok Reservation		**Del Norte County**		**Humboldt County**		**State of California**		**United States**	
	Numbers	**Percent**	**Numbers**	**Percent**	**Numbers**	**Percent**	**Numbers**	**Percent**	**Number**	**Percent**
FY 1999-2011 Data										
Population	1,121		27,507		126,518		33,871,650		281,424,602	
Labor Force (age 16 and over)	836		21,624	100.0%	100,662	100.0%	25,596,144	62.4%	142,600,000	63.9%
Civilian in Labor Force	434	38.7%	10,029	46.4%	60,635	60.2%	15,977,879		-	
Employed	326		8,959	41.4%	55,426	55.1%	14,718,928		136,900,000	
Unemployed	108	12.9%	1,070	4.9%	5,209	5.2%	1,110,274	4.3%	5,700,000	4.0%
Median Household Income	$20,592	-	$29,642	-	$31,226	-	$47,493	-	$41,994	-
Median Family Income	$23,592	-	$36,056	-	$39,370	-	$53,025	-	$50,732	-
Per Capita Income	$10,881	-	$14,573	-	$17,203	-	$22,711	-	$21,587	-
Families below poverty level	75	26.8%	1,035	20.2%	3,987	12.9%	845,991	10.6%		9.2%
Individuals below poverty level	367	32.8%	4,765		24,059	19.5%	4,706,130	14.2%	31,600,000	12.4%
Data Source for Yurok Reservation: http://factfinder.census.gov/servlet/QTTable?_bm=y&-context=qt&-reg=DEC_2000_SF4_...										
Data Source for California: http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_2000_SF...										
Data Source: National unemployment data at: http://data.bls.gov/cgi-bin/surveymost										
Department of Labor	**Yurok Reservation**		**Del Norte County**		**Humboldt County**		**State of California**		**United States**	
Data From March 2009	**Mar-09**		**Mar-09**		**Mar-09**		**Mar-09**		**Mar-09**	
Labor Force			12,030		61,800		18,580,900		154,048,000	
Employed			10,510		54,400		16,449,700		140,887,000	
Unemployed	339	30.2%	1,520	12.7%	7,400	12.0%	2,131,200	11.5%	13,161,000	8.5%
Compared to Feb 2009				12.2%		11.4%		10.9%		
*Note: Klamath Population has decreased nearly 25% since the 1990 Census Population was 827.										
Data Source: Unemployment data on California at: http://www.labormarketinfo.edd.ca.gov										
Data Source: National unemployment data at: http://data.bls.gov/cgi-bin/surveymost										
Data Source: Unemployment for Yurok Reservation & Counties from Dennis Mullins, Labor Market Information Division/North Coast Region/State EDD										

EXHIBIT Y D - 0 1

California Food Guide

Health and Dietary Issues Affecting American Indians

By Stacey Kennedy, M.S., R.D.



What's New

According to the 2000 census, 333,300 people of American Indian/Alaska Native (AI/AN) descent live in California, making the Golden State with the highest number of American Indians. AI/AN have the highest prevalence of type 2 diabetes in the world.

Public Health Implications

Diabetes is being diagnosed at young ages in Native American Indian Communities and has become an urgent priority. AI/AN adults ages 50-64 in California have a significantly higher prevalence rate of diabetes (19.6 percent) compared with Whites (8.3 percent).[1] Cardiovascular disease (CVD) used to be rare among AI/AN. The current rates of CVD in American Indians exceed rates in other U.S. populations and can be fatal.[2] AI/ANs historically have had very low rates of cancer but cancer is now the second leading cause of death for AI/AN over the age of 45, and rates appear to be increasing.[3]

Definition

AMERICAN INDIAN TRADITIONAL FOODS

In the 1800s wild plants and wild game dominated the land in California. Before the time of agriculture, they were probably dominant in the areas that later became agricultural. The abundance of wild vegetable foods in California was largely determined by the geographical environment.

Indians boiled foods in almost all native cultures. Stone boiling was the dominant method in California. The earth oven was used to prepare plant and animal foods. Some foods were heat and steam cooked (normally overnight). Broiling or roasting were common methods of preparation. Smoking and drying meat was also common

and a great variety of vegetable foods were preserved by drying.

Food has immense social and spiritual importance in the culture of American Indians. Every tribe prepared and preserved its food in some way to store food for future use. Recipes are well reported in many localities. In areas where hunting and fishing dominated, the Indians were well nourished. Acorns were a staple food, the nutmeats were ground and then leached before final preparation and consumption.

Foods traditionally eaten by some American Indians in California include the following:[4]

Game and wild fowl (squirrel, deer, rabbit, elk, grouse, quail, and other fowl)
Seafood (salmon, trout, eel, clams, mussels)
Nuts and seeds (acorn meal, hazelnuts, black walnuts, pine nuts, grass seeds)
Grains and beans (corn, beans, corn tortillas)
Vegetables (turnip, wild potato, wild carrots, bitter roots, camass bulbs, squash, wild celery, greens, yucca, cactus, mushrooms, wild onions, garlic)
Fruits and flowers (cactus fruit, yucca flowers, squash blossoms, wild strawberry, gooseberry, raspberry, blackberry, tuber berries, huckleberry, service berry, salmon berry, choke cherry, wild plum, melons, peach).

Burden

Lifestyles of California tribes have drastically changed over time. Compared with their ancestors many Indians have a more sedentary lifestyle. Diabetes, obesity, and poverty are now epidemic among tribes in California. Moreover diet has changed dramatically for American Indians. Poor diet is known to be a contributing risk factor to diabetes, obesity and CVD. Current foods eaten by American Indians contain more fat, sugar, preservatives, and artificial ingredients than the traditional foods.

Incidence and Prevalence

The AI/AN population is one of the smallest minorities, compromising only 1.6 percent of the total United States population. California is home to more AI/AN than any other state. California Indian country is 4.5 times larger than the Navajo Nation of Arizona, stretching over 123,000 square miles. There are 107 federally recognized tribes. Of the 627,600 self-reported American Indians in California, the largest number of people reside in Los Angeles County according to the Census 2000. There are 221,000 AI/AN currently living in non-urban portions of California that make up the Indian Health Service population area. Despite their numbers as a group, California's Indians are the most medically underserved in the nation.

Prevalence data in this section has been collected for both American Indians and Alaskan Natives due to the fact that most research and census data report both groups together.

- American Indian and Alaskan Native adults, ages 50-64, in California, have a significantly higher prevalence rate of diabetes (19.6 percent) compared with Whites (8.3 percent).[2] One in five AI/AN adults age 65 and over report having diabetes.[5]
- Approximately six in ten AI/AN California adults diagnosed with diabetes have also been diagnosed with high blood pressure -- nearly 2.8 times the rate of diabetes in AI/AN adults not diagnosed with diabetes.[5]
- Approximately one in four (26.2 percent) AI/AN adults with diabetes in California has also been diagnosed with heart disease, nearly 3.4 times the rate of adults not diagnosed with diabetes.[5]
- Approximately four in five AI/AN California adults with diabetes (81.1 percent) are overweight or obese. This proportion is highest among AI/AN adults ages 18-64 (86.4 percent).[5]

Trends/Contributing Factors

When American Indians were uprooted from their lands, many became dependent on commodity foods. These foods include canned meat, poultry, fruit juice, peanut butter, eggs, powdered and evaporated milk, dried beans, instant potatoes, peas, and string beans. Younger American Indians in California are less likely than their grandparents to supplement their diets with wild game and wild foods like squirrel, rabbit, deer, acorn mush (puree), greens, nuts, berries, and mushrooms. Many southwestern items, like beans, rice, and tortillas, are now listed as traditional American Indian foods. One study carried out among 198 rural women living in California found that 60 percent of the women did not eat any fruit and 28 percent did not eat any vegetables on the previous day.[6] The regular consumption of milk and vegetables was positively related to dietary quality in these women.

Only 50 years ago, infectious diseases, malnutrition, and infant mortality were the leading health problems for AI/AN populations. Because of advances in sanitation and improved access to food and modern medical care, those problems have been reduced, but not eliminated. Modern diseases (e.g., obesity and diabetes) are on the rise. These modern or chronic diseases are in turn related to multiple factors that might be cultural, genetic, socioeconomic, or behavioral.[7]

Obesity increases the risk for certain chronic diseases, including cardiovascular disease and diabetes. The prevalence of overweight and obesity has increased for the general U.S. population as well as among AI/AN. California data derived from the U.S. Behavioral Risk Factor Surveillance System (BRFSS) indicates that AI/AN individuals were more likely to report obesity (BMI of $\geq$30 kg/m^2) (23.9 percent) than respondents of other racial/ethnic groups (18.7 percent). These estimates are probably conservative, because respondents tend to underreport weight.[7]

Research derived from BRFSS has demonstrated that the prevalence of diabetes among AI/ANs is increasing among all age groups. Diabetes awareness (defined as ever having been told by a health professional that he or she has diabetes) was much higher in the AI/AN population (9.7 percent) than respondents of other racial/ethnic groups (5.7 percent). Pacific Coast Indians had a rate of 10.6 percent. The percentage of adults who actually have diabetes is likely higher because, in certain cases, the respondents were unaware of their health status regarding this condition. In fact, the National Health and Nutrition Examination Survey III reported that for every two U.S. adults with diagnosed diabetes, one person has undiagnosed diabetes. Thus, the burden of diabetes for AI/ANs might be even more substantial than these estimates indicate.[7]

Although tribes differ in their use and abuse of alcohol, American Indians as a group report the highest prevalence of alcohol dependence and the highest number of alcohol-related deaths of all ethnic groups in the U.S. Indian Health Service estimates age-adjusted alcohol-related deaths to be five times higher than the general U.S. population. Alcohol consumption is higher in men than in women. Despite the negative impact alcohol consumption has had on some tribes, it remains unclear how and why alcohol use disorders develop in greater proportion in American Indians than in the general U.S. population.[8]

Barriers to Implementation/Myths

Living in poverty has taken its toll on the health and nutritional status of American Indians in California. The consequences of poverty are exacerbated for the many American Indians living in communities such as reservations located in rural areas. Often in these rural areas food costs are high and availability, in addition to selection, is limited. Poverty also imposes barriers on transportation options. Isolation and financial constraints have forced families in these rural areas to rely on less expensive, often high-fat foods, and few fruits and vegetables. American-Indian communities often cite lack of availability, poor quality, and high expense as barriers to fruit and vegetable intake.[9]

The USDA Food Distribution Program on American Indian Reservations provides commodities that are a significant source of food in many AI/AN communities. Unfortunately, until recently, the commodity foods, which provide the basis for many American Indian diets, were very high in fat.

Common Concerns/Strategies

In some areas traditional foods may not be available. Sharing information about lower fat versions of modern and traditional foods may provide opportunities for health promotion among those who live in urban locations. A daily diet containing a variety of vegetables, fruits, grains, legumes, lean meats, and fish offers a reduced risk of heart disease, cancer, diabetes, and other diseases. These nutrient rich foods contribute to a

healthful lifestyle and a fuller life. Traditional forms of physical activity such as dancing or gathering materials for basket weaving, carving, and regalia making as well as collecting native foods for ceremonial and personal use should be recognized and encouraged as part of a healthy lifestyle. The many health benefits from traditional food choices and preparation methods are now acknowledged.

Opportunities for Improvement

Eating a regular diet of native and natural foods will help American Indians prevent and control many of today's chronic diseases. Most native foods are appropriate for diabetics, people with heart disease, and most people with gastrointestinal problems. They are low in fat, high in nutrients, and a good fiber source.

Cultural awareness is an essential quality to effective nutrition education. It is an in-depth understanding, acceptance, and respect for the values, assumptions, and beliefs widely shared by a group of people, which structure behaviors of group members from birth until death.[10] Among health service providers there is often an assumption that diversity will disappear as a result of assimilation. However AI/AN, like many ethnic groups are committed to sustaining their cultural identity. Increasingly, cultural knowledge and understanding are important to personnel responsible for quality programs.

The design of "one-size-fits all" nutrition education programs that are aimed at the dominant culture may or may not provide relevant, applicable information for the native population. To provide quality nutrition education it is important to become familiar with the values, customs, and behaviors of American Indians. In the native culture, the family is highly valued and cooperation rather than competition among community members may be emphasized. Many families have evolved from an extended kinship family to a nuclear family. American Indian groups learn best by doing, and teaching comes from oral tradition. American Indians believe food is medicine and often times traditional medicine is integrated with Western medicine. Food habits occur within a cultural context and the nutrition educator has responsibility to become familiar with the broader aspect of culture as it relates to other dietary habits and heath. American Indian groups, in the midst of widespread social, environmental, and economic changes, are in need of better food resources and culturally sensitive nutrition education.

Clinical Implications

Poor dietary habits as well as obesity appear to play a major role in the development of type 2 diabetes among indigenous peoples living in California. The reduction in consumption of the traditional foods appears to play a key role in the increased prevalence of certain chronic diseases in the American Indian population in California.

Resources/Web Sites

1. "California Indian Women: Good Nutrition for All," an 18 minute videotape summarizing the results of a collaborative study between the University of California Cooperative Extension and Indian Health Service Clinics focuses on the healthy food habits of American Indian women and their families. This program features members of California Indian tribes. 1995. If you would like a copy, please contact Rita Mitchell at ritamitc@berkeley.edu

2. The Hearst Museum of Anthropology at UC Berkeley
http://hearstmuseum.berkeley.edu/

3. Indian Health Service, National Diabetes Program
www.ihs.gov/MedicalPrograms/diabetes/nutrition/n_facts.asp

4. American Indian Health Resources: Research and Education Resources
http://www.ldb.org/vl/geo/america/indi_hr.htm

5. Native American Nutrition Education Database
http://www.nal.usda.gov/fnic/NatAm_database.html

6. A Resource List for Educators from the Native American Nutrition Education Database http://peaches.nal.usda.gov/pubs/ethnic/NativeAmericanResources.asp

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American Diabetes Association.

For more information, Please visit www.diabetes.org

Native American Complications

Listen to text

Consider these sobering statistics from the U.S. Department of Health and Human Services' Indian Health Service:

- **2.2 times higher** — Likelihood of American Indians and Alaska Natives to have diabetes compared with non-Hispanic whites
- **68%** — Percent increase in diabetes from 1994 to 2004 in American Indian and Alaska Native youth aged 15-19 years
- **95%** — Percent of American Indians and Alaska Natives with diabetes who have type 2 diabetes (as opposed to type 1 diabetes)
- **30%** — Estimated percent of American Indians and Alaska Natives who have pre-diabetes

American Indians and Alaska Natives are clearly at greater risk. Educate yourself on how to prevent type 2 diabetes if you don't have it now, or how to effectively treat it if you've been diagnosed.

Learn about the American Diabetes Association's programs designed for the Native American community.

American Diabetes Association 1701 North Beauregard Street Alexandria, VA 22311 1-800-DIABETES

EXHIBIT

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