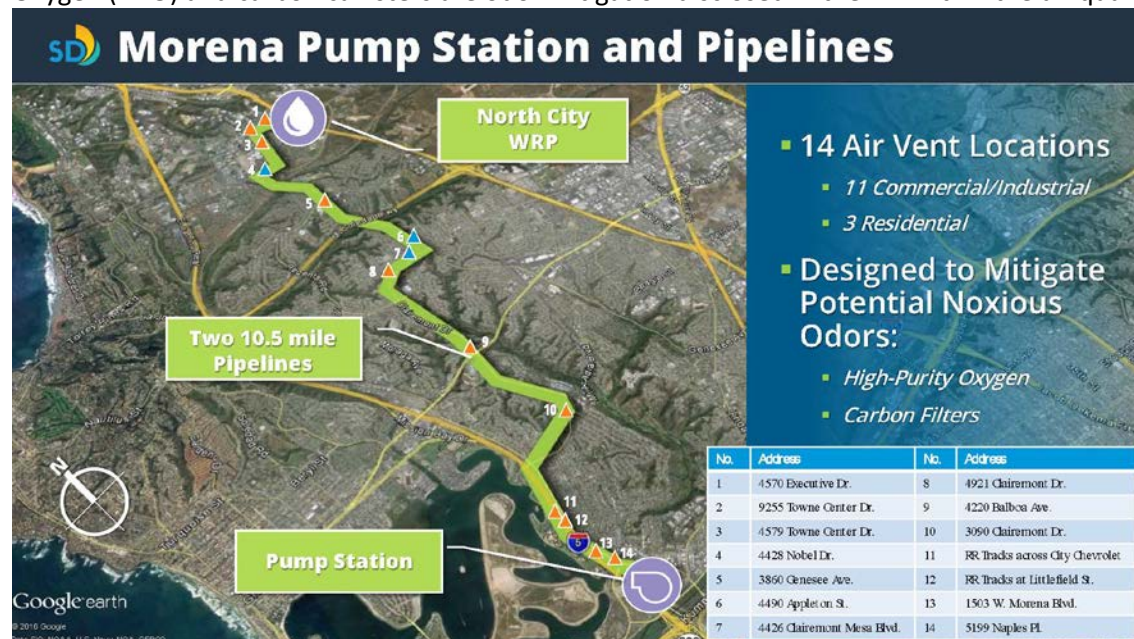




May we see a detailed map of the proposed pipeline route that includes the locations of tunneling, open trenching, and air release valves? This map should include which side of the streets the project will be constructed on.

The Final EIR includes graphics depicting the locations of the air valves and the work areas associated with open trenching and tunneling construction methods. The EIR also includes an analysis of potential odor. The High Purity Oxygen (HPO) and carbon canisters are odor mitigation disclosed in the EIR within the air quality section.

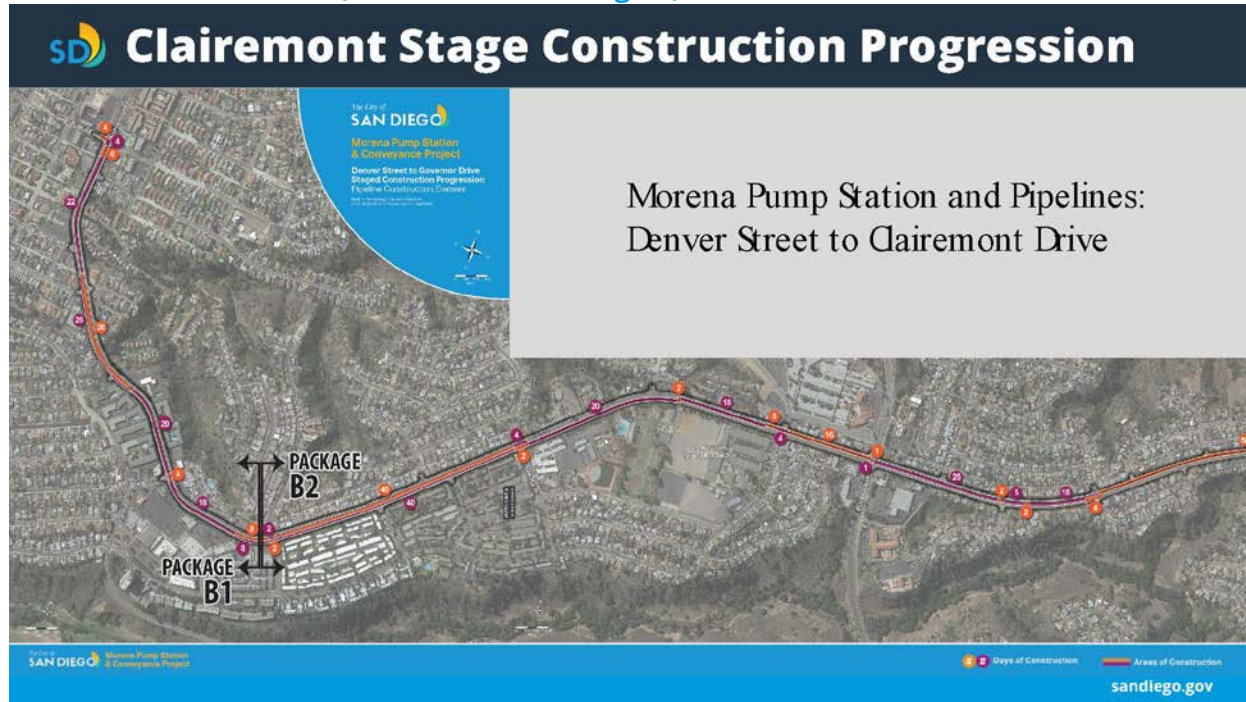


Air Release Valve Vent Map – See attachment for a larger view of the map

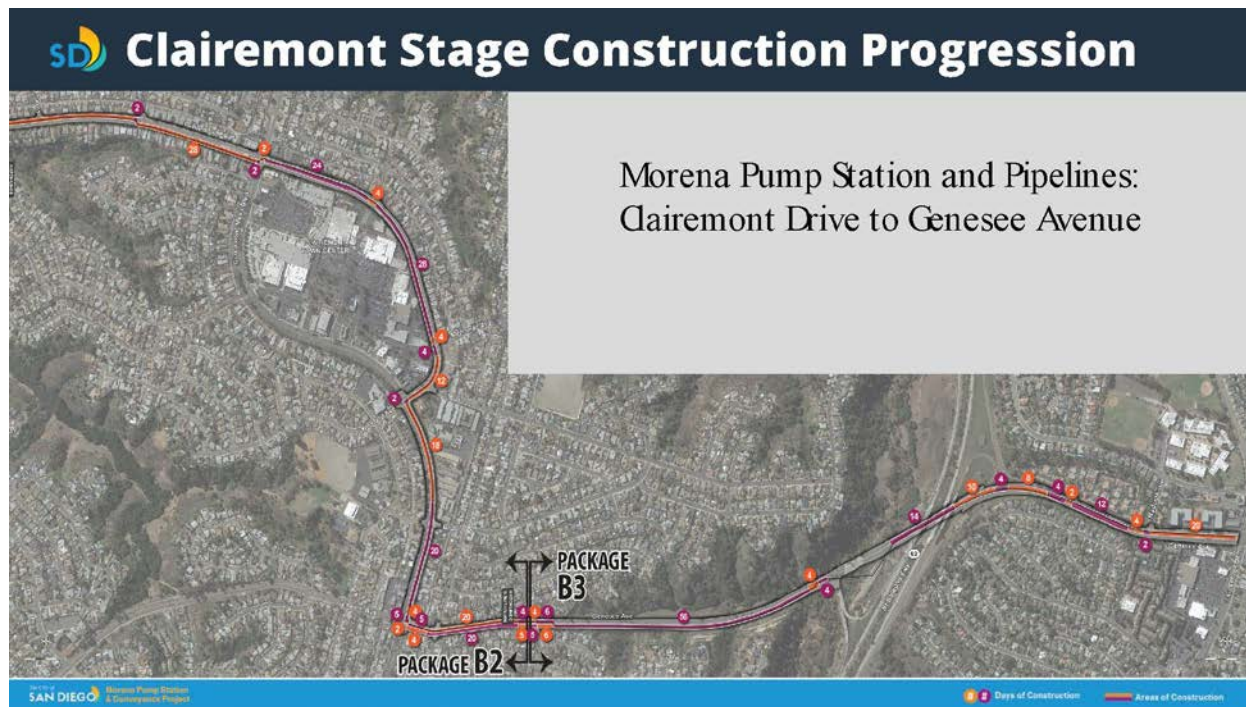
The alignment maps below include estimated* time to complete specific segments of the pipeline. Please note the color variation to help identify segment lengths only. The City will be meeting with the working groups to further address concerns regarding pipeline construction impacts. In May 2017 an interactive map was launched on the Pure Water Program website detailing the location, status and purpose of each of the Phase 1 – North City projects. This page allows users to see an overlay of the proposed facilities on an interactive satellite imagery map. To view the projects, visit: purewatersd.org/phase1

*- The EIR used a 75 feet /day assumption for the traffic, noise and air quality analysis. The maps and figures in the graphics below were shared at community meetings and were formally referenced in the Response to Comments within the Final EIR along with a description of why the working days along the segments are different.

May we see a detailed map of the proposed pipeline route that includes the locations of tunneling, open trenching, and air release valves? This map should include which side of the streets the project will be constructed on. (Continued from Page 1)

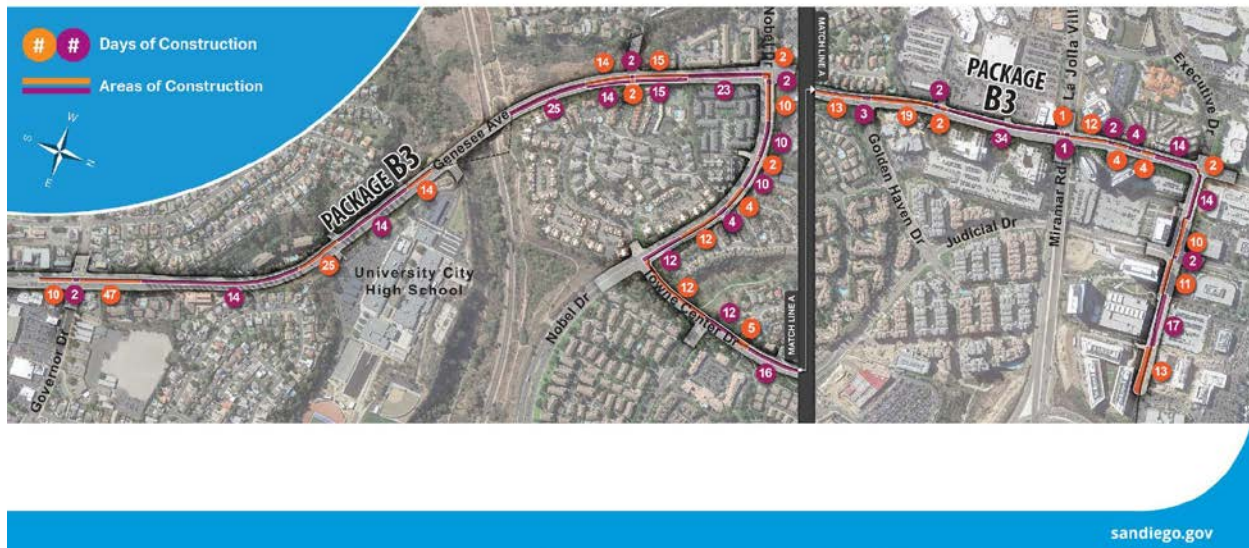


Morena Pump Station and Pipeline Map 1 – See attachment for a larger view of the map



Morena Pump Station and Pipeline Map 2 – See attachment for a larger view of the map

SD University City Stage Construction Progression



Morena Pump Station and Pipeline Map 3 – See attachment for a larger view of the map

What kind of safety precautions are present in this project in the advent of a catastrophic event such as an earthquake?

All of the sewer force main is constructed of steel, which is considered a flexible pipeline material. In addition, all of the pipeline joints are fully welded, forming a continuous pipeline with no joints posing a threat of separation. Specifically, during an earthquake event, the pipeline would flex along with the ground motion. If there was an earthquake large enough to cause a displacement of the surrounding earth, it is expected that the pipeline would buckle without rupture.

In the unlikely event that the pipeline did rupture for some reason, the Morena Pump Station pressure and flow monitoring system would sense an out-of-range operating condition and automatically shut down the pumping and diversion systems, minimizing a spill.

What preventatives are in place to stymie potential explosions/geysers of raw sewage?

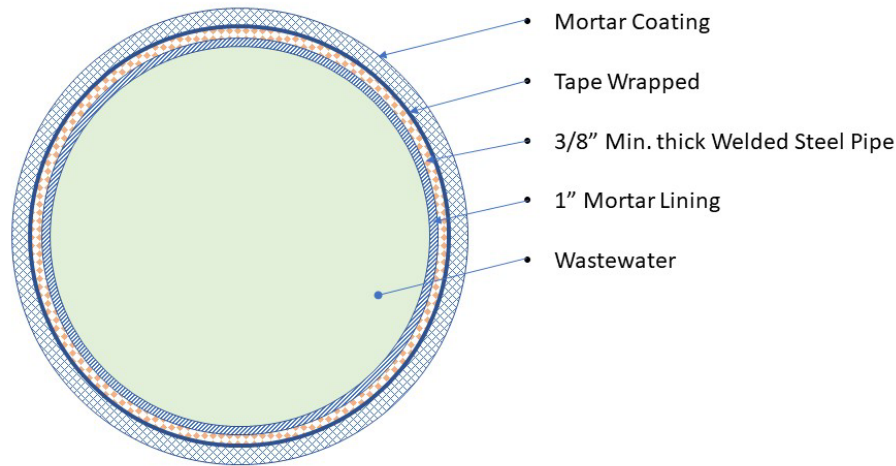
In no scenario would an explosion or geyser occur, even in the event of a pipe break due to the fact this is a transmission pipeline between two facilities that is only pressurized at one location. A sudden change in pressure would cause the pump station to turn off and wastewater would cease to be pumped in the force main thereby depressurizing the pipe along the alignment.

How much pressure are the contents of the pipes under?

The wastewater force main operating pressure will be between 54 and 216 pounds per square inch (psi). The operating pressure differs depending on location and flow rate. Specifically, the operating pressure in the portion of the pipeline through the University Town Center area will range from 50 psi to 98 psi. The operating pressure along Clairemont Drive from Iroquois to Clairemont Mesa at Genesee Avenue ranges from 54 psi to 100 psi. In all areas, the operating pressures along the pipeline are well below its 530 psi pressure rating. All the pipelines have been designed in accordance with the American Water Works Association requirement safety factor of 2.00.

How is the pipeline insulated?

The following shows a cross-section of the pipe:



Why were the other routes present on the UCPG's recommendation not chosen as the current alignment for the project?

This information is included in the Response to Comments within the Final EIR. Additional information on which alternatives were considered but not carried forward is included in Chapter 3 of the Final EIR.

Numerous potential alignments were evaluated for the pipelines. The City looked at multiple ways to convey wastewater from the Morena Pump Station to the North City Water Reclamation Plant, including those currently being promoted by the community. Alignments were evaluated using factors including utility conflicts, easement and property acquisition, operational complexity, energy demand, schedule, risks, construction feasibility, and community and environmental impacts. The proposed route was determined in consideration of these factors. Maps of numerous alignments that were evaluated can be found in Chapter 3 of the EIR.

One alternative alignment suggested by the University City Community Planning Group (UCPG) is a route that follows SDG&E property through Tecolote Canyon and north to the Interstate 805 (I-805). This route was evaluated for its potential to reduce impacts to the community, in particular construction related impacts associated with noise and traffic. However, this alternative would require tunneling along its entire length, and extreme low points along the alignment would require excavation of very deep tunnel shafts. Tunneling methods involve machinery that is more energy intensive and hence would result in greater air quality impacts during construction. Tunneling equipment would also result in higher noise and vibration levels. Further, this alternative route would have potential wetland and other biological impacts within sensitive canyon areas at entrance and exit pit locations along the trenchless tunnels. As such, this alternative alignment would not lessen the environmental effects of the Project. Additionally, the alternative alignment would conflict with established policies that prohibit new wastewater force mains in canyons and other environmentally sensitive lands. This alternative route would also conflict with the City's Sewer Design Guide that encourages construction of sewer utilities within roadway right-of-way.

Another alignment proposed is the "Route 52 & 805" alignment. This alternative alignment would follow the same route along the southern two-thirds of the alignment and would result in similar noise and traffic impacts as the current alignment within this area; therefore, this alternative route would not alleviate the significant and unavoidable impacts that would result with construction of the Morena Pipelines. Noise and traffic impacts occurring within the UCPG area would be transferred east to other communities and would also result in significant and unavoidable impacts. Additionally, this alternative alignment would require longitudinal encroachments in California

Pure Water San Diego Morena Pump Station and Pipelines

Department of Transportation (Caltrans) right-of-way for construction of the pipelines within both State Route 52 (SR-52) and I-805. Proposed longitudinal encroachments within the access control right-of-way of freeways identified as part of the freeway and expressway system are also prohibited per the Caltrans Project Development Procedures Manual, Chapter 17. These policies and practices have been confirmed through City communications with Caltrans. Therefore, this alternative alignment is not considered feasible.

The final community suggested alignment would follow Clairemont Mesa Blvd East to the I-805. Similar to the previous alignment this alternative would not substantially reduce traffic or noise impacts. The route would be the same for the first two-thirds of the alignment and would result in similar significant and unavoidable traffic and noise impacts related to the construction of the Morena Pipelines. Traffic and noise impacts along Genesee Avenue for the northern portion of the route would be transferred east along Clairemont Mesa Boulevard. Additionally, the alignment would impact wetlands and other environmentally sensitive resources on Marine Corps Air Station (MCAS) Miramar along the Landfill Gas (LFG) Pipeline route. Due to spacing limitations and the inability to widen the City's utility easement through the Miramar National Cemetery, placing two large diameter pipelines along this alignment though MCAS Miramar is infeasible.

Are there other similar pipelines in SD County / in CA? Have there been any ruptures on these similar pipelines?

The City of San Diego operates more than 30 Pump Stations and wastewater force mains across the city. In the past, there were some instances of very small, very infrequent spills associated with wastewater force mains, but no history of catastrophic failure resulting in significant sewage spills. Two similar sized and complex wastewater force mains in operation are the 1) dual 87-inch diameter wastewater force mains which convey flow from Pump Station 2, near the San Diego International Airport to the Point Loma Wastewater Treatment Plant, and 2) the 14-inch diameter sludge force main which conveys thickened sludge from the Point Loma Wastewater Treatment Plant to the Metro Biosolids Center.

Attachment: Sewer Air Valves and Trunk Sewer Pipelines Map

How do the air release valves work? What will be their impact to the surrounding community?

The function of an air relief valve is to release air pockets that collect at each high point of a full pressured pipeline. An air release valve can open against internal pressure because the internal lever mechanism multiplies the buoyant force to be greater than the internal pressure. This greater force opens the orifice whenever air pockets collect and pressurize in the valve. Air release valves are essential for pipeline efficiency and water hammer protection (see Question 9). The following is a video animation of the operation of an air release valve:

<https://www.youtube.com/watch?v=E38Z3ltzaUs>

The proposed air valves will be housed inside an underground concrete vault structure that will have a passive air vent with a carbon filter to absorb any noxious odors that may be present in the vault.

The impact to the surrounding community will likely be unnoticeable. The following are pictures of existing air release valves on Mission Gorge Road west of Mission Trails Regional Park and along Kika Court in Rancho Peñasquitos.

Pure Water San Diego Morena Pump Station and Pipelines





What will be the impacts of water hammering to the community?

The wastewater force main operating pressure differs depending on location and flow rate. For the portion of the pipeline from the Morena Pump Station to approximately Denver Street at Clairemont Drive, the operating pressure at full flow (37.7 million gallons per day) is 216 psi. Along Clairemont Drive from Iroquois to Clairemont Mesa at Genesee Avenue, the operating pressure ranges from 54 psi to 100 psi; through San Clemente Canyon the operating pressure is 151 psi; through Rose Canyon, the operating pressure is 140 psi; and the portion of the pipeline through the University Town Center area has an operating pressure ranging from 50 psi to 98 psi. In all areas, the operating pressures along the pipeline are well below the 530 psi rated capacity of the pipeline. All the pipelines have been designed in accordance with American Water Works Association require a factor of safety of 2.00.

To protect the pipeline, flywheels incorporated into the pump assembly, use momentum forces to allow the pumps to come gently to a stop and therefore prevent a sudden pressure spike in the pipeline, sometimes referred to as water hammer. In the event of a power outage, the inflow gates have a battery backup system to close the gates and prevent further inflows into the pump station. Therefore, systems are in place along the pipeline to eliminate water hammer. This is a common practice in engineered pressure pipelines.

How deep will the pipeline be below the surface?

The minimum and maximum depth to the top of the pipe is 6 feet and 15 feet, respectively.

What is the lifeline of the pipe?

The average life expectancy for a steel pipe is 75 years based on evaluations by the Public Works Capitalization.

According to the American Iron and Steel Institute's Welded Steel Pipe Design Manual, the service life of steel pipe depends upon rates of internal abrasion and external corrosion. The service life can be increased by the use of proper coatings and cathodic protection. Abrasion can be caused by grit in the fluid flow and can be reduced by protective linings. Technology for control of corrosion is available and well documented. With attention to coatings and cathodic protection, the service life of steel pipe can be extended indefinitely.

The proposed design provides for tape wrapping, impressed current cathodic protection and a mortar shield to prevent external corrosion. A cement mortar lining is proposed to prevent internal abrasion.

In the eventuality of maintenance on the pipe, how will repair be performed?

Maintenance of the pipeline will include routine internal inspections of the pipeline utilizing robotic cameras to assess the condition of the pipeline.

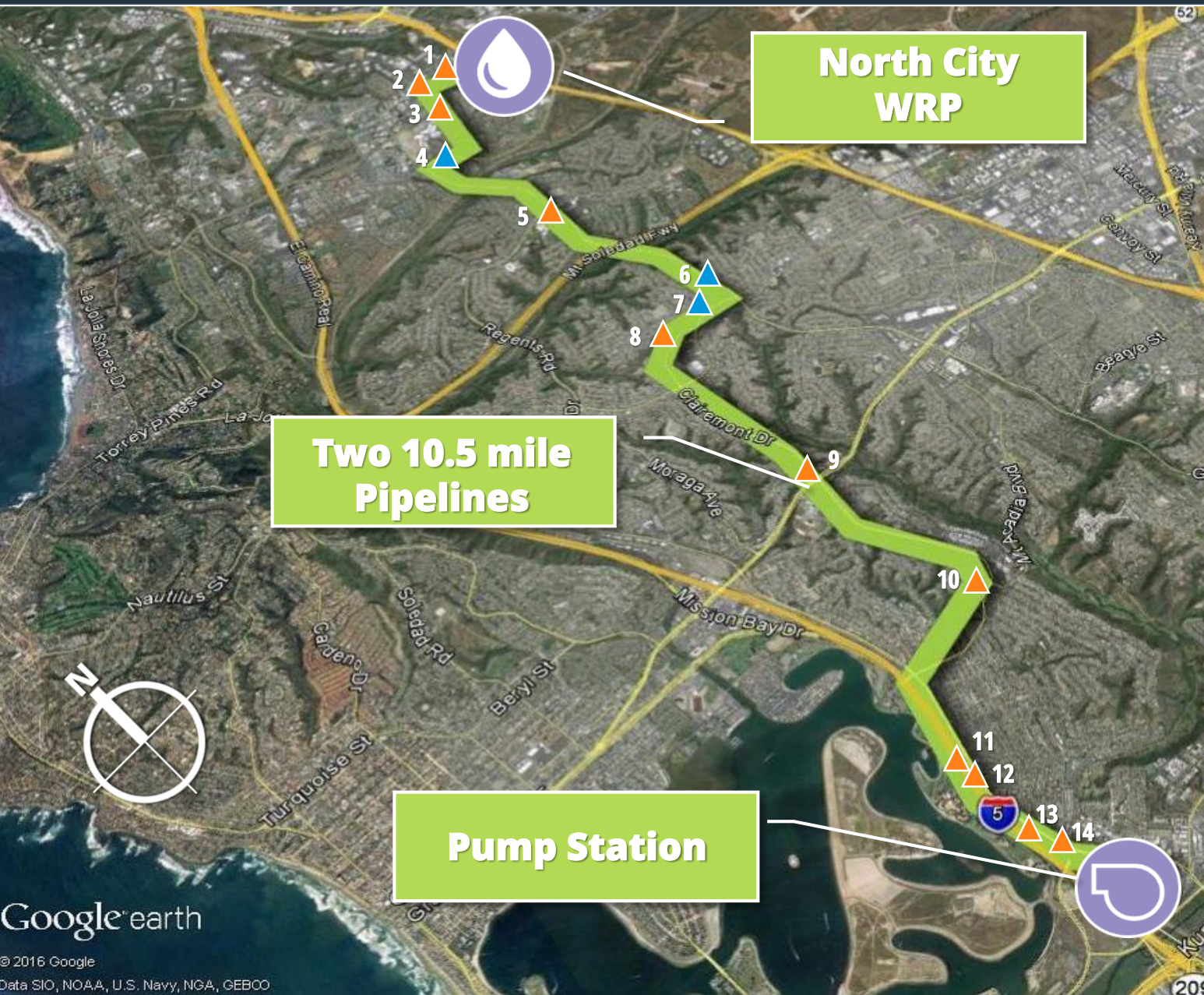
If a segment of pipeline needs to be repaired, the repair may consist of:

- excavation of the affected area
- removal of the affected portion of the pipeline
- installation of a new segment of the pipeline

The new pipeline section will be prepared for service by:

- mortaring the inner liner
- taping the external area
- re-connecting the impressed current for cathodic protection
- shielding the pipe exterior with rock
- backfilling the trench
- re-surfacing the roadway

SD Morena Pipelines Air Vent Locations



■ 14 Air Vent Locations

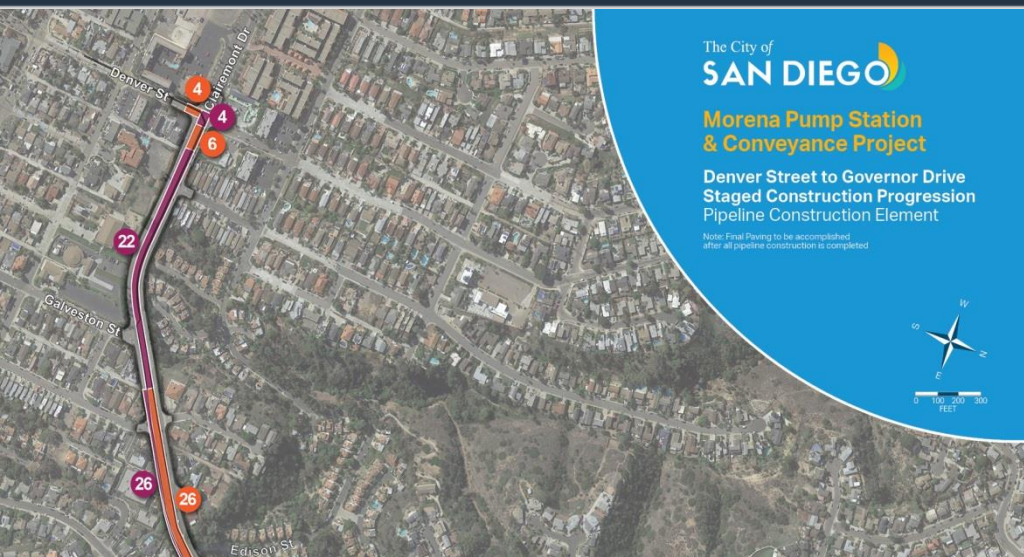
- 11 Commercial/Industrial
- 3 Residential

■ Designed to Mitigate Potential Noxious Odors:

- High-Purity Oxygen
- Carbon Filters

No.	Address	No.	Address
1	4570 Executive Dr.	8	4921 Clairemont Dr.
2	9255 Towne Center Dr.	9	4220 Balboa Ave.
3	4579 Towne Center Dr.	10	3090 Clairemont Dr.
4	4428 Nobel Dr.	11	RR Tracks across City Chevrolet
5	3860 Genesee Ave.	12	RR Tracks at Littlefield St.
6	4490 Appleton St.	13	1503 W. Morena Blvd.
7	4426 Clairemont Mesa Blvd.	14	5199 Naples Pl.

Clairemont Stage Construction Progression

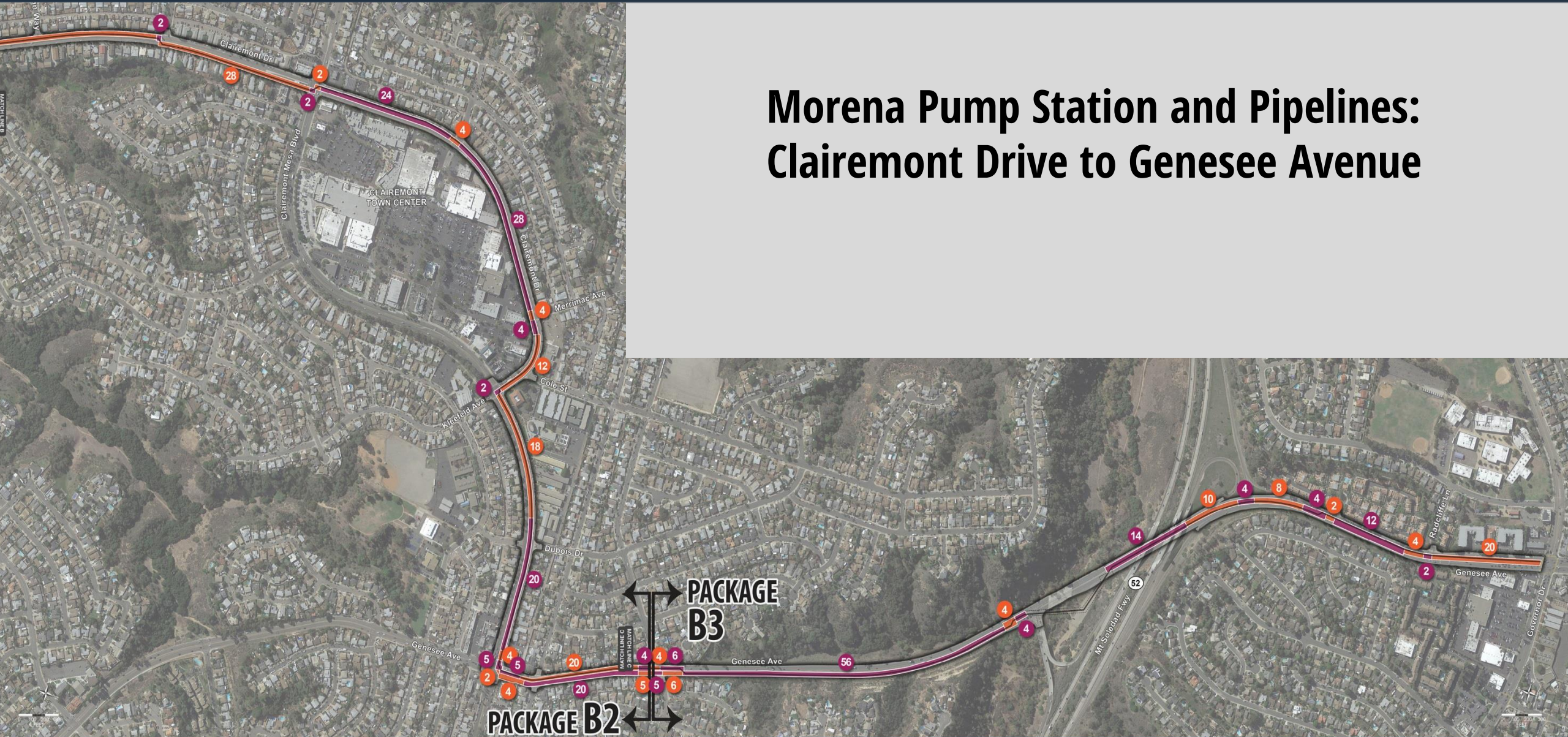


Morena Pump Station and Pipelines: Denver Street to Clairemont Drive



SD Clairemont Stage Construction Progression

Morena Pump Station and Pipelines: Clairemont Drive to Genesee Avenue



University City Stage Construction Progression



Sewer Air Valves and Trunk Sewer Pipelines

