Appendix C

Technical Memorandum

Floodplains

Prepared by

1.0 FLOODPLAINS

1.1 ENVIRONMENTAL SETTING

The City is divided into 45 Drainage Districts. The Platinum Triangle generally includes portions of Drainage Districts 25, 26, and 27, with ARTIC falling under District 27. This area of the City is considered part of the Santa Ana River Watershed (Referred to as Watershed E). Drainage Master Plans have been completed for these Districts and updated after 1986. The City's current drainage criteria were developed based on the fact that many of the systems in place are undersized for current run-off projections. Most systems within the City will be designed for a minimum storm frequency of 10 years, with specific and practical limits regarding surface flow during storms. A lower limit was established due to the overall limited conveyance capacity downstream.

The area surrounding ARTIC is almost entirely covered with impermeable surfaces. Run-off in the project area occurs primarily through sheet flow across the parking areas in a southwest direction to the surrounding street system. The street system has been designed to convey a 10-year storm event while maintaining one dry lane in each direction. Catch basins located within the street system collect gutter run-off and transport it via the drainage system to the Southeast Anaheim Channel (referred to as E12), which flows to the Santa Ana River.

Storm drain systems tributary to the Santa Ana River require sizing to adequately convey the run-off from a 25-year storm event. ARTIC and the surrounding area will require drainage infrastructure adequate to convey the 25-year run-off. Surface flow limitations also apply to this area of the City and are outlined in the City's drainage criteria. Additional storm drain construction may be necessary in this area to meet the surface flow limitations, depending on grading and development configuration (City of Anaheim, 2008).

ARTIC is located in an area considered protected by levees from the 100-year flood event projected for the Santa Ana River. After flood control measures were implemented with the collaboration of USACE, these levees were accredited by FEMA. Despite the protection provided from flooding by levees and the channeling of the Santa Ana River, over-toppling and/or failure of these structures is possible (FEMA, 2009). The City has an Emergency Action Plan in the case of flooding and the OCFCD has an Emergency Action Plan in case of a breach or overflow of the levee system.

1.2 THRESHOLDS OF SIGNIFICANCE

According to the CEQA Guidelines, the thresholds of significance for Hydrology/Water Quality are defined by:

a) *Would the project violate any water quality standards or waste discharge requirements?*

b) *Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*

c) *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or off-site?*

d) *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site?*

e) *Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*

f) *Would the project otherwise substantially degrade water quality?*

g) *Would the project place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*

h) *Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows ?*

i) *Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?*

j) *Would the project increase the likelihood of inundation of seiche, tsunami, or mudflow?*

k) *Would the project substantially degrade water quality by contributing pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling, or storage, delivery areas, loading docks or other outdoor work areas?*

l) *Would the project substantially degrade water quality by discharge which affects the beneficial uses (i.e., swimming, fishing, etc.) of the receiving or downstream waters?*

1.2.1 Project Impacts

a) Would the project violate any water quality standards or waste discharge requirements? (No Impact)

Construction activities for ARTIC will include clearing, grading, and excavating activities for the Intermodal Terminal, the stub-end track/platforms, and the road improvement projects. These construction activities will expose surface soils and may require de-watering of groundwater, which could result in sediment eroding into the downstream receiving water, along with attached soil nutrients and organic matter, and other nutrients, soil additives, pesticides, construction chemicals, and miscellaneous waste. Potential pollutants will be controlled by BMPs identified in the construction SWPPP. Minor oil and fluid leaks from vehicles will potentially be transported by runoff water as it flows into the storm drain system during operation of ARTIC.

The RWQCB criteria to control the discharge of construction related pollutants will be met through the implementation of BMPs. BMPs will be in compliance with the current municipal stormwater permit (B. Jones, electronic mail, January 15, 2010) and will be implemented to control sediment erosion and other pollutants. Permanent BMPs addressing potential and anticipated pollutants during project operation will be identified in the WQMP. Construction and operation of ARTIC will not violate water quality standards or waste discharge requirements. No impacts are anticipated for this issue area.

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?) (Less Than Significant Impact)

ARTIC involves constructing an Intermodal Terminal and station platforms, improving Douglass Road, and upgrading rail tracks. No on-site groundwater resources will be used for the construction and operation of ARTIC. ARTIC will receive its water from municipal supply and will not exceed existing or projected water uses presented in the Platinum Triangle WSA and the City's 2005 UWMP. ARTIC will not substantially deplete groundwater supplies or interfere substantially with groundwater resources. Less than significant impacts are anticipated for this issue area.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or off-site? (No Impact)

ARTIC will be constructed on previously disturbed and paved land that does not contain defined drainage patterns. ARTIC components will not create an additional surface that could change the existing drainage area. ARTIC will be designed to direct local drainage into the existing storm drainage system with discharge to the Santa Ana River. No impacts are anticipated for this issue area.

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site? (No Impact)

ARTIC will be constructed on previously disturbed and paved land that does not contain defined drainage patterns. Since the project site is currently covered with impervious surfaces, the rate or volume of surface runoff within the site after the construction of ARTIC will not be significantly greater than the existing conditions. ARTIC will be designed to direct local drainage into the storm drainage system. No impacts are anticipated for this issue area.

e) Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? (No Impact)

ARTIC is currently almost entirely covered with impermeable surfaces. Run-off in the project area occurs primarily through sheet flow across the parking areas in a southwest direction to the surrounding street system. Stormwater flow will be directed into the storm drain line below Douglass Road. Catch basins located within the street system collect gutter run-off and transport it via the drainage system to Channel E12, which flows to the Santa Ana River. According to the Platinum Triangle Drainage Study, ARTIC will be located within Benefit Zone SD-20, which is part of District 27 drainage area and is directly tributary to the Santa Ana River. Additional drainage lines into the zone are not anticipated and the rate or volume of runoff water within ARTIC will not be greater than existing conditions.

Construction activities could cause sediment to erode into the downstream receiving water, along with attached soil nutrients and organic matter, and other nutrients, soil additives, pesticides, construction chemicals, and miscellaneous waste. Oil and fluid leaks from vehicles could also potentially be added to runoff water as it flows towards the ultimate destination of the Santa Ana River. RWQCB criteria to control the discharge of pollutants associated with runoff water will be met through the implementation of BMPs. The identified BMPs will be in compliance with the CGP (B. Jones, electronic mail, January 15, 2010).

With the WQMP and planned BMPs in place, the construction and operation of ARTIC will not create or contribute runoff water which will exceed the capacity of existing or planned drainage systems or provide substantial additional sources of polluted runoff. No impacts are anticipated for this issue area.

f) Would the project otherwise substantially degrade water quality? (No Impact)

Drainage and pollutants as a result of ARTIC will be managed with appropriate measures that comply with federal, state, and local regulations. The RWQCB criteria to control the discharge of pollutants associated with runoff water will be met through the implementation of BMPs. The identified BMPs will be in compliance with the current municipal stormwater permit (B. Jones, electronic mail, January 15, 2010). ARTIC will not otherwise substantially degrade water quality standards. No impacts are anticipated for this issue area.

g) Would the project place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? (No Impact)

The project does not include the construction of housing. No impacts are anticipated for this issue area.

h) Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows? (No Impact)

FIRM panel 06059C0142J was evaluated to identify flood designations and floodways including and proximate to ARTIC. Though ARTIC will not be located within a 100-year flood hazard area, the FIRM panel inclusive of ARTIC and surrounding area depicts the site located adjacent to a 100-year flood Zone A (FEMA, 2009). This potential flood zone, the Santa Ana River, is channelized and protected by an up-stream levee system. The FIRM map considers the 100-year flood hazard area to be contained within the channel. Adjacent areas are not likely at risk. The FIRM map notes that overtopping and/or failure of the levee system or channel is possible.

Development of ARTIC will remain adjacent to the flood Zone A hazard area and will not add new structures within a 100-year flood hazard area that will impede or redirect flood flows. No impacts are anticipated for this issue area.

i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (No Impact)

The Prado Dam and reservoir are located approximately 2.5 miles east (upstream) of the City and ARTIC, in Riverside County. The Prado Dam was completed in 1941 and provides flood protection to the Lower Santa Ana River Basin. In addition, Prado Dam works in tandem with Seven Oaks Dam, which is also located on the Santa Ana River in the upper Santa Ana Canyon, about eight miles northeast of the City of Redlands in San Bernardino County. Construction of Seven Oaks Dam and improvements to the Prado Dam and downstream channel facilities are being implemented under the Santa Ana Mainstream Project, constructed by the USACE, Los Angeles District. These improvements have enabled Prado Dam to take full advantage of the

improved channel capacity downstream and increase the level of flood protection to communities within the Santa Ana River floodplain.

During torrential rainfall events or periods of extended rain, the storage capacity of upstream Prado Dam or Seven Oaks Dam could potentially be exceeded and overflow, increasing flow volume in the channelized Santa Ana River. The potential exists for dam failure. If either occurs, the river could swell and potentially flood the previously designated surrounding areas. Due to currently implemented improvements to the dams, the FIRM map considers the 100-year flood hazard area to be contained within the channel. Adjacent areas are not likely to be at risk. No impacts are anticipated for this issue area.

j) Is the project susceptible to inundation by seiche, tsunami, or mudflow? (No Impact)

ARTIC is not located in close proximity to a coast or ocean and implementation of ARTIC will not create or be subject to inundation by seiche, tsunami, or mudflow. No impacts are anticipated for this issue area.

k) Would the project substantially degrade water quality by contributing pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling, or storage, delivery areas, loading docks or other outdoor work areas? (No Impact)

Construction activities associated with ARTIC will involve the use of small volumes of commercially available hazardous materials and the stockpiling of construction debris. A construction SWPPP will be prepared and implemented during the construction of ARTIC as a BMP. The SWPPP will include specific BMPs to minimize the potential for hazardous materials and construction debris from entering the local stormwater drainage system.

There will be transport or disposal of hazardous materials during the operation of ARTIC. Any such materials incidental to operational activities, including routine maintenance, will be required to be stored, used, and disposed of in accordance with existing federal, state, and local hazardous materials regulations.

Construction and operation of ARTIC will not contribute pollutants that could substantially degrade water quality. No impacts are anticipated for this issue area.

l) Would the project substantially degrade water quality by discharge which affects the beneficial uses (i.e., swimming, fishing, etc.) of the receiving or downstream waters? (No Impact)

Beneficial uses for Reach 2 of the Santa Ana River include uses for agriculture, groundwater recharge, recreational activities, freshwater and wildlife habitat, and rare, threatened or endangered species. Runoff water from ARTIC will be in compliance with applicable federal,

state, and local laws and regulations. BMPs will be in place to control pollutants. No impacts are anticipated for this issue area.

1.3 CUMULATIVE IMPACTS

The majority of the Santa Ana River watershed is already developed and surface flows are not expected to increase significantly. To protect existing and future structures, future projects will be required to provide necessary drainage improvements. Cumulative impacts as a result of ARTIC are considered less than significant for this issue area.

1.4 EXISTING REGULATIONS AND STANDARD CONDITIONS

- City of Anaheim General Plan;
- City of Anaheim Local Implementation Plan;
- CGP Order 2009-0009-DWQ; and
- MS4 Permit, Order No. R8-2002-0010, NPDES No. CAS618030.

1.5 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

ARTIC will have a less than significant impact on hydrology and water quality.

1.6 MITIGATION MEASURES

ARTIC will have a less than significant impact on hydrology and water quality. No mitigation measures are required for this issue area.

1.7 LEVEL OF SIGNIFICANCE AFTER MITIGATION

ARTIC will have a less than significant impact on hydrology and water quality.