

6.9.2 Sewer Separation Projects

Sewer separation was selected as a feasible alternative and was included in the baseline integrated plan for the following seven rack basins: 8, 9, 13, 21, 25, 30, and 39. Sewer separation projects have already been completed for Racks 9 and 39. Per the Consent Decree lodged on November 13, 2009, Section V, Paragraph 11, Akron shall complete the separation of two of the remaining racks within 4 years of the Date of Lodging. Racks 8 and 25 are the two projects identified for this first round of implementation.

Rack 8

Rack 8 Separation is a Specific Action Project in the Consent Decree. The proposed improvements will consist of construction of approximately 3,350 feet of new sanitary and/or storm sewer within the Rack 8 drainage basin to separate the existing combined sewers and eliminate overflows to the Little Cuyahoga River. The improvements will also include modifications to the Rack 8 structure to eliminate the rack.

Rack 9

Sewer separation for Rack 9 was completed in 2005 during the CSO Rack 9 Sewer Separation project. The purpose of this project was to separate the sanitary and storm sewer flows in the Rack 9 Service Area to eliminate combined sewer overflow. The Rack 9 Service Area is located in east Akron, north of the intersection of East Market Street and Case Avenue. Rack 9 is located within a manhole in Kent Street, north of Case Avenue, and it overflows to the Little Cuyahoga River. Prior to the project, sanitary and storm sewer systems were separate on all of the streets within the Rack 9 Service Area, except for Williams Street. Six laterals on Williams Street were connected to the 15-inch diameter combined sewer that flows to a 20-inch combined sewer along Kent Street to CSO Rack 9. Sanitary laterals from several parcels on McNaughton Street were connected to a combined 12-inch sewer on McNaughton Street, east of Roswell Avenue. The improvements consisted of construction of approximately 1000 linear feet of new sanitary sewers along McNaughton and Williams Streets to separate the combined sewers and approximately 200 linear feet of new storm sewer. The improvements also included modifications to the Rack 9 structure to eliminate the rack structure. The existing CSO monitoring system equipment was also removed from Rack 9 as part of this project.

Rack 13

The planning level project consists of constructing 5,800 feet of new sewer within the Rack 13 drainage basin to eliminate overflows to the Little Cuyahoga River.

Rack 21

The planning level project anticipates diverting a portion of Rack 21 tributary area to the Ohio Canal Interceptor Tunnel. The remaining portion of Rack 21 tributary area is proposed to be separated to eliminate overflows to the Little Cuyahoga River. This consists of the area along East Market Street, extending to the OCI tunnel alignment. The improvement consists of constructing approximately 9,600 linear feet of new sewer.

Rack 25

Rack 25 Separation is a Specific Action Project in the Consent Decree. The proposed improvements will include construction of approximately 4,870 feet of new sanitary and/or storm sewer within the Rack 25 drainage basin to separate the existing combined sewers and eliminate overflows to the Little Cuyahoga River. In the existing system, sanitary and storm sewer systems are separated on all of the streets within the Rack 25 drainage basin, except for a 12-inch and 24-inch combined sewer located on Frederick Avenue from Vesper Street to North Howard Street and an 18-inch combined sewer located on Glenwood Avenue from Bass Avenue to North Howard Street. Several inlet connections flow to these sewers, as well as sanitary laterals and separate 8-inch sanitary sewers that are located along and serve the side streets in the service area. The combined sewers on Frederick Avenue flow to a 36-inch combined sewer that is located within an easement between Frederick Avenue and Cuyahoga Street and that discharges to the Rack 25 manhole. The improvements will also include modifications to the Rack 25 structure in order to eliminate the rack.

Rack 30

The plan includes constructing 7,300 feet of new sewer within the Rack 30 drainage basin to eliminate overflows to the Little Cuyahoga River.

Rack 39

Sewer separation for Rack 39 was completed in 2000 during the CSO Rack 39 Elimination project. The purpose of this project was to eliminate Rack 39 from the

combined sewer system by separating the storm water and sanitary wastewater flows currently received by the rack. Rack 39 is located in a chamber that is accessible from a manhole near the Quaker Street/Ash Street intersection in the downtown area of the City of Akron. The rack discharges to the Ohio Canal Interceptor sanitary sewer and overflows to the Ohio Canal enclosure. By eliminating Rack 39 from the system, combined sewer overflows to the Ohio Canal enclosure were eliminated. The CSO Rack 39 Elimination project involved the construction and reconstruction of both sanitary and storm sewer facilities in the area served by Rack 39. Improvements to the sanitary sewer system consisted of redirecting connections of the active sanitary and combined sewer laterals from the existing combined sewer to an existing, parallel sanitary sewer, reconstructing portions of the existing sanitary sewer to allow the connection of active sanitary and combined sewer laterals, and constructing approximately 1100 linear feet of new sanitary sewer to extend the sewer to areas in which there are active sanitary and combined sewer laterals without an existing, separate sanitary sewer. The improvements to the storm sewer system consisted of converting the existing combined sewer into a storm sewer and converting a storm manhole by plugging the connection to the Ohio Canal Interceptor and rechanneling the existing structure to allow storm water to flow to the Ohio Canal enclosure. The project consisted of constructing approximately 140 linear feet of new storm sewer.

6.9.3 Storage Basins

Racks 3, 5/7, 10/11, 12, 14, 15, 22, 26/28, 27/29, and 36 will be controlled by storage basins. A storage basin project has already been completed to control Racks 40, 31, and 30. Figures showing the proposed improvements for each of these basins are included at the end of this section in Figures 6-14 through 6-25. The size of the basins depends on the level of control selected. A full level of control analysis is presented in Section 7.0. For comparison purposes, Table 6-8 presents a brief summary of the ten proposed storage basins and the required size and volume based on zero and four overflows per year and using the adjusted 1994 typical year.

Table 6-8 Storage Basin Sizing

Rack #	0 Overflows Per Year		4 Overflows Per Year	
	Dimensions (LxWxD in ft)	Volume (MG)	Dimensions (LxWxD in ft)	Volume (MG)
3	112x112x20	1.9	81x81x20	1.0
5/7	86x86x20	1.1	57x57x20	0.5
10/11	130x130x20	2.5	87x87x20	1.1
12	201x201x20	6.0	142x142x20	3.0
14	185x70x20	2.0	103x70x20	1.1
15	99x99x20	1.4	71x71x20	0.7
22	128x128x20	2.4	78x78x20	0.9
26/28	124x124x20	2.3	85x85x20	1.1
27/29	216x40x20	1.3	169x40x20	1.0
36	88x88x20	1.1	57x57x20	0.5

Rack 3

The Rack 3 basin is anticipated to be located north of the rack itself on the west side of Kelly Avenue. Stored flows would be released to the Little Cuyahoga Interceptor, and overflow would be diverted to the Little Cuyahoga River.

Racks 5/7

The proposed Racks 5/7 basin is anticipated to be located just east of Rack 7, southeast of Rack 5, near the south corner of the intersection of River Street with South Case Avenue. Stored flows would be released to the Little Cuyahoga Interceptor, and overflow would be diverted to the Little Cuyahoga River.

Racks 10/11

The proposed Racks 10/11 basin is anticipated to be located east of the Little Cuyahoga River and west of the B&O Railroad tracks, just north of Hazel Street. Flows stored in the basin would be released to the Little Cuyahoga Interceptor, and overflow would be diverted to the Little Cuyahoga River.

Rack 12

The proposed Rack 12 basin is anticipated to be located northeast of the existing rack, south of Evans Avenue near the Camp Brook Interceptor. Flows stored in the basin would be released to the Camp Brook Interceptor, and overflow diverted to Camp Brook.

Rack 14

The proposed Rack 14 basin is anticipated to be located south of the Little Cuyahoga River and the railroad tracks, near North Forge Street. At this location it would be necessary to relocate the rack to a location upstream of its present location. Flows stored in the basin would be released into the Little Cuyahoga Interceptor, and overflow would be diverted to the Little Cuyahoga River.

Rack 15

The proposed Rack 15 basin is anticipated to be located between Rack 15 and the Little Cuyahoga River, near East North Street. Flows stored in the basin would be released to the LCI, and overflow would be diverted to the Little Cuyahoga River.

Rack 22

The proposed Rack 22 basin is anticipated to be located west of N. Howard Street, near the intersection of Cuyahoga Street and Lods Street. Flows stored in the basin would be released to the Little Cuyahoga Interceptor via a microtunnel beneath the Little Cuyahoga River, and overflow would be diverted to the Little Cuyahoga River.

Racks 26/28

The proposed Racks 26/28 basin is anticipated to be located south of Memorial Parkway, east of Hickory Street, and north of the Valley View Nursing & Rehabilitation Center. This basin location may make it necessary to relocate Rack 26 to a location upstream of its present location. Flows stored in the basin would be released to the Little Cuyahoga Interceptor, and overflow would be diverted to the Little Cuyahoga River.

Racks 27/29

The proposed Racks 27/29 basin is anticipated to be located in the northwest corner of the intersection of Memorial Parkway and Uhler Avenue. Flows stored in the basin would be released to the LCI, and overflow would be diverted to the Little Cuyahoga River.

Rack 36

The proposed Rack 36 basin is anticipated to be located just north of the rack itself, between the railroad tracks and the Main Outfall sewer, near the Valley View Golf

Course. Flows stored in the basin would be released to the Main Outfall sewer, and overflow would be diverted to the Cuyahoga River.

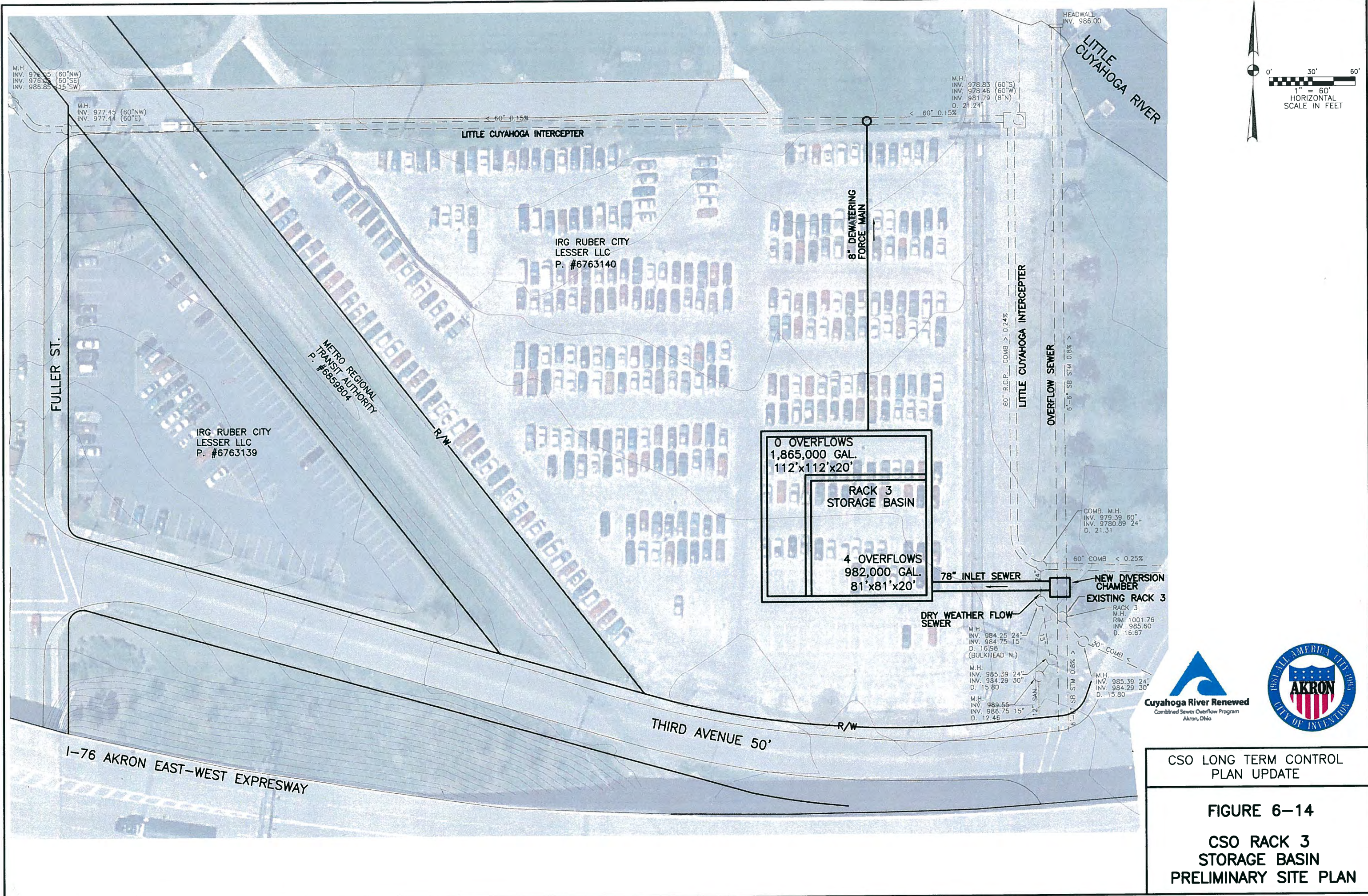
Racks 40/31/30

Combined sewer overflow is controlled from Racks 40, 31 and 30 by the Cuyahoga Street Storage Facility ("Storage Facility"). This Storage Facility became operational in 2006. The basin is located between the Main Outfall and the Little Cuyahoga River, just west of the confluence of the Cuyahoga and Little Cuyahoga Rivers, near the original wastewater treatment plant for the City of Akron. Flows stored in the basin are released to the Main Outfall sewer, and overflow is diverted to the Little Cuyahoga River. The basin volume is 9.5 MG and is the largest storage basin in the LTCP. It reduces the annual CSO volume for the Akron system by approximately 33%. Based on a "knee-of-the-curve analysis" that was done during the Facilities Plan '98 Alternatives (1999), the basin was sized using the 1.4-month storm event with the controlling parameter being the annual number of events. In the Facilities Plan '98 Alternatives (1999), the CSO system was analyzed in detail to determine characteristics of each CSO, including peak flow rate, volume, number of events, number of hours, and CBOD loading. The combined discharge from these racks was determined to be the highest on an annual basis for all characteristics except for peak flow rate. Therefore, the City proceeded with design and construction of this Storage Facility. The facility consists of a Junction Chamber located at the existing Rack 40 overflow structure, a 9-foot diameter influent pipe to convey the flow to the basin, a 9.5 MG open-top storage basin, two 6.5-foot diameter overflow discharge pipes to convey the overflow to the Little Cuyahoga River, and an adjacent Pump Gallery Structure to house the dewatering pump facilities and other controls and equipment. The adjacent Pump Gallery Structure has multiple levels, one for the controls and hydraulic power packs and one for the dewatering pumps.

The overflow from Racks 40 and 31 flow to the Junction Chamber where it is diverted to either the basin influent pipe, or to the river through the use of gates. The influent pipe directs flow into Cell 1 at the northwest corner of the basin. The overflow from Rack 30 enters the basin through a separate influent pipe and is directed into Cell 1 at the northeast corner of the basin. The basin is divided into three cells, each measuring approximately 144 feet long, 120 feet wide, and 25 feet side water depth (30 feet total depth). During wet weather events, the cells fill sequentially by overflowing interior weir

walls. The maximum hourly influent design flow rate, based on hydraulic modeling, is 203 MGD. If the 9.5 MG total volume is filled, the flow passes over an overflow weir in Cell 3 to a collection channel which directs the flow to two overflow pipes that convey the flow to the river. After the completion of an overflow event, the basin is designed to be dewatered in 24 hours by pumping the flow to the WPCS after the influent flow rate at the plant is below the secondary treatment capacity of 110 MGD. The basin is also designed to overflow from the former Rack 40 discharge point when the flow in the river is too high for the Storage Facility to maintain a flow-through condition and free discharge to the river.

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PLAN UPDATE

FIGURE 6-14

CSO RACK 3
STORAGE BASIN
PRELIMINARY SITE PLAN

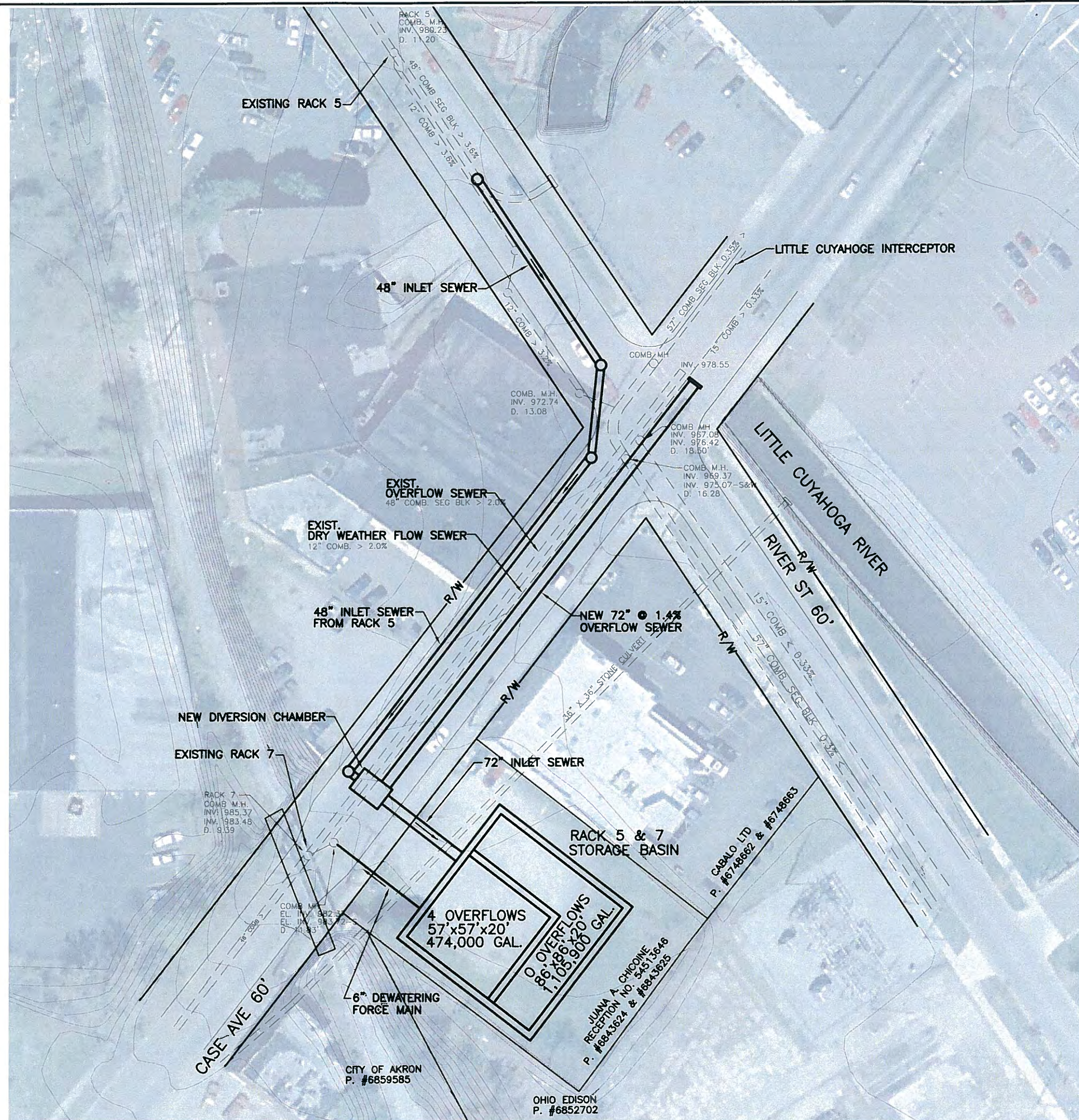
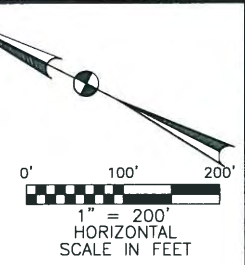
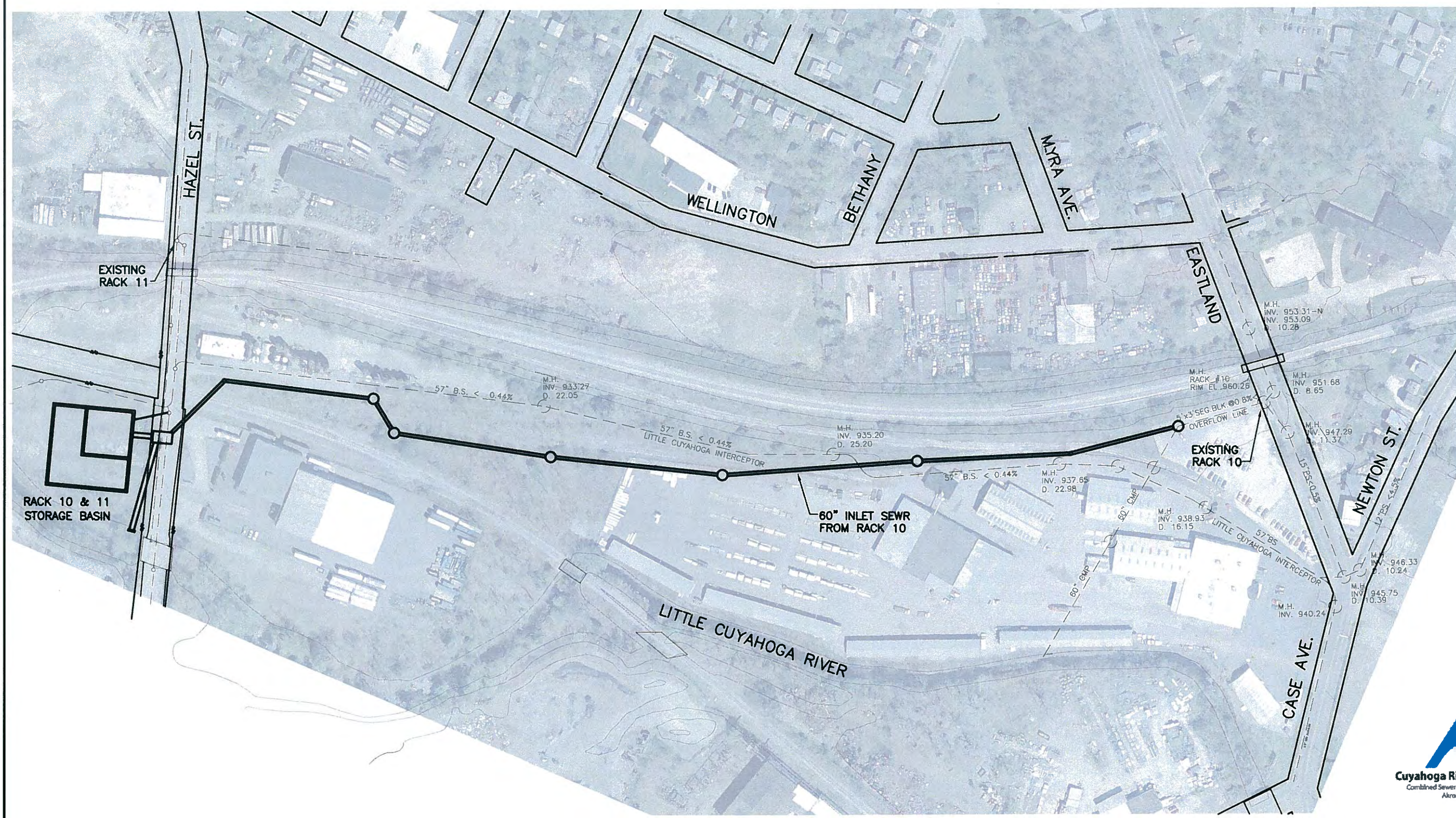
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FIGURE 6-15

CSO RACK 5/7
STORAGE BASIN
PRELIMINARY SITE PLAN

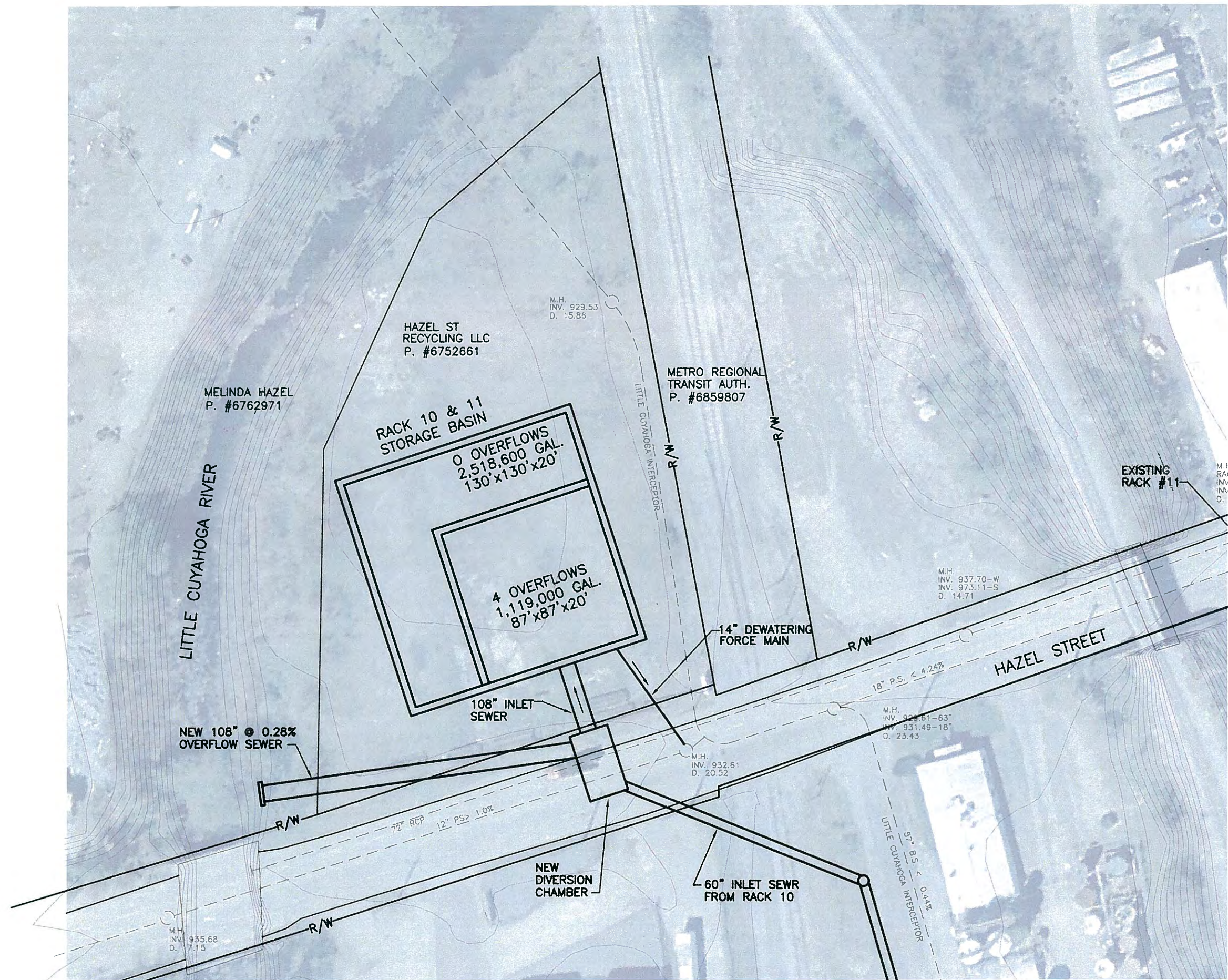
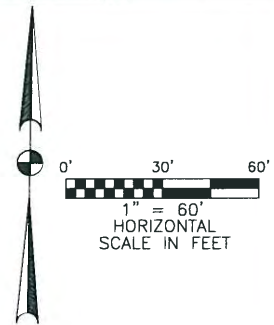
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FIGURE 6-16
CSO RACK 10/11
STORAGE BASIN
PRELIMINARY OVERVIEW

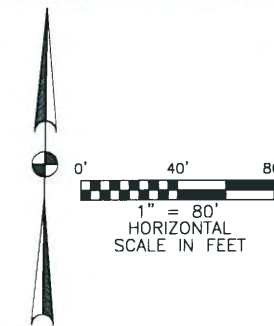
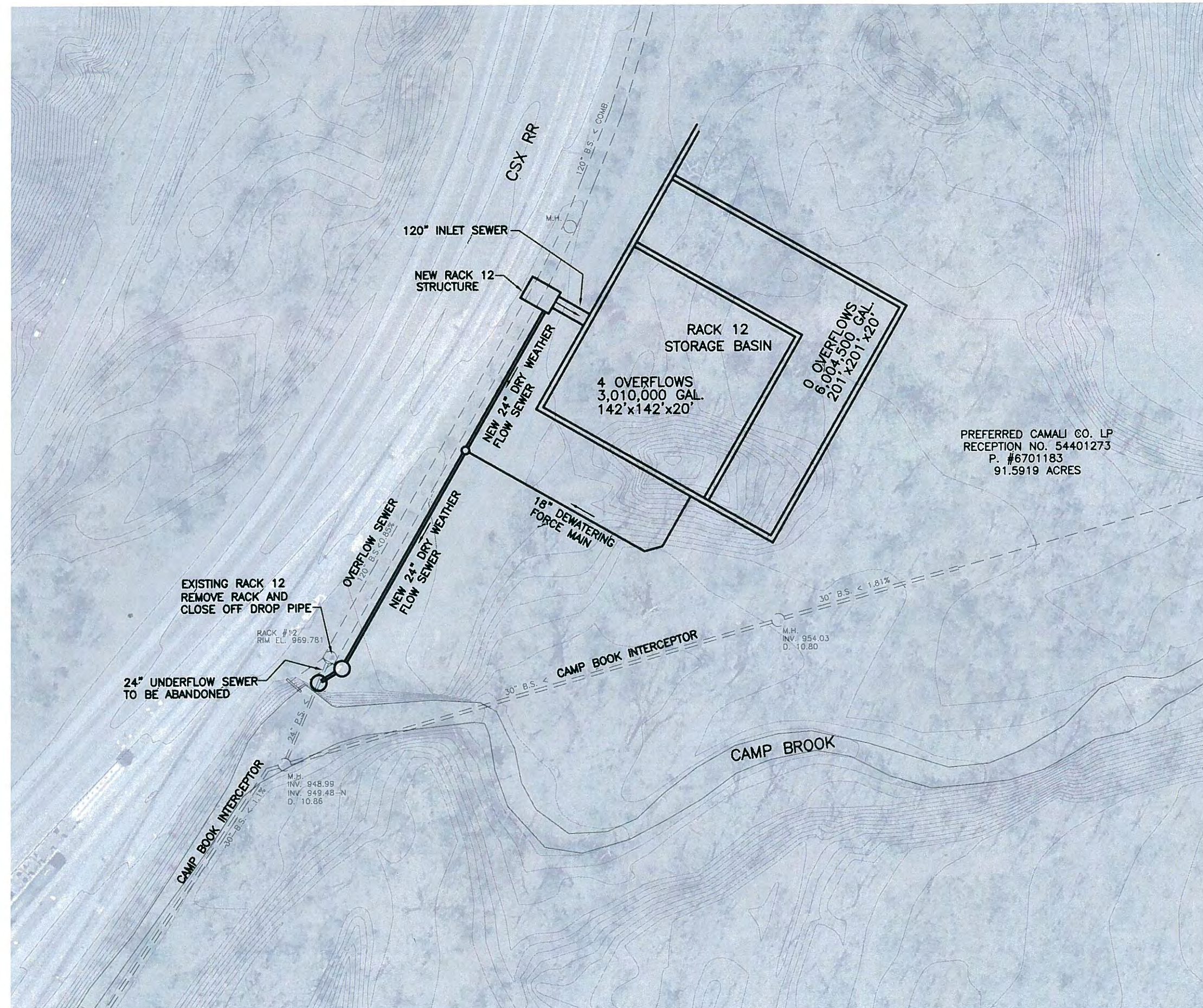
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PLAN UPDATE

FIGURE 6-17
CSO RACK 10/11
STORAGE BASIN
PRELIMINARY SITE PLAN

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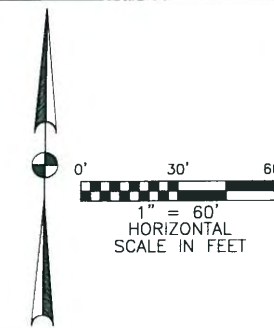
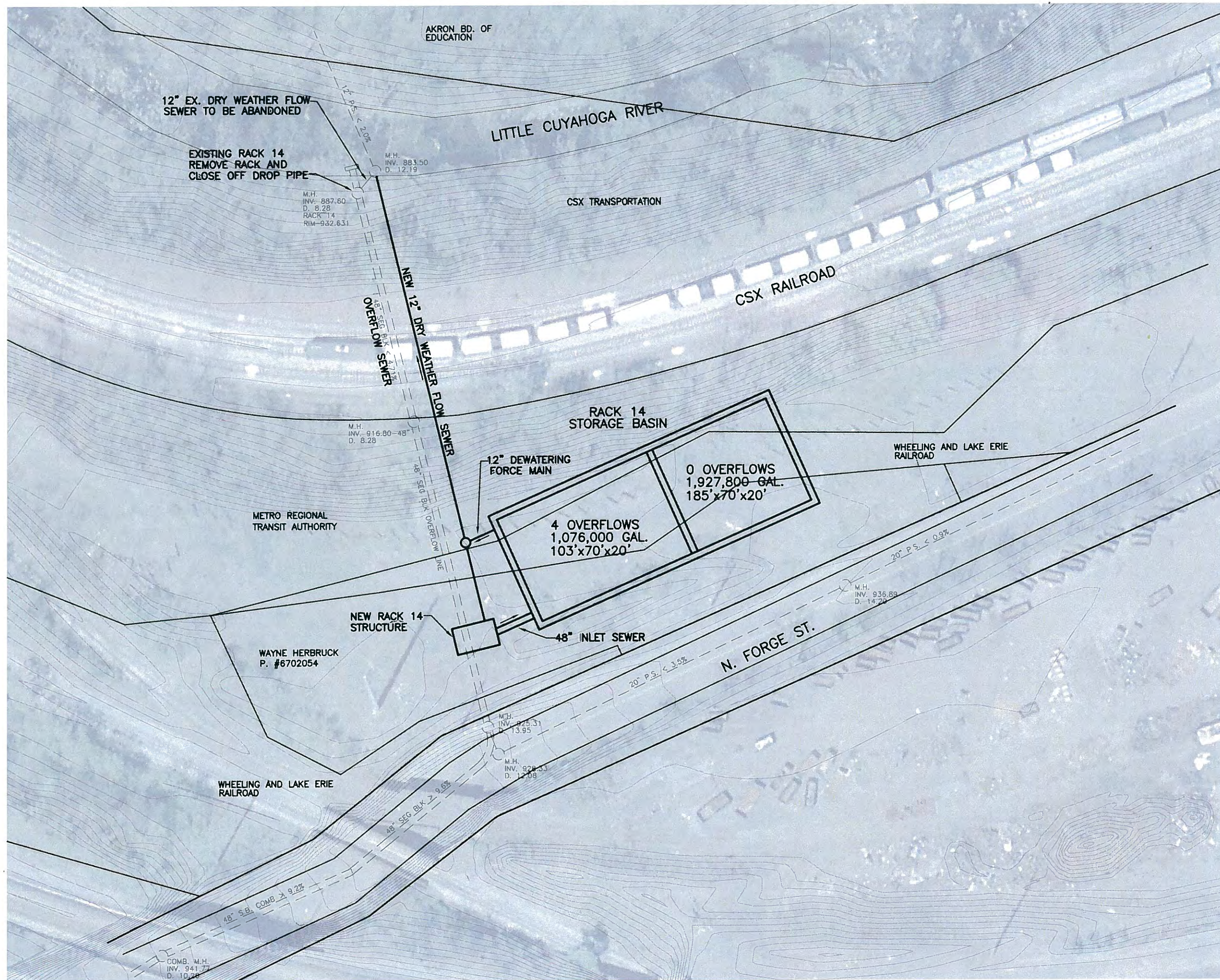


CSO LONG TERM CONTROL
PLAN UPDATE

FIGURE 6-18

CSO RACK 12
STORAGE BASIN
PRELIMINARY SITE PLAN

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CSO LONG TERM CONTROL
PLAN UPDATE

FIGURE 6-19

CSO RACK 14
STORAGE BASIN
PRELIMINARY SITE PLAN