

MEMORANDUM FOR FILE

SUBJECT: Supplement No. 2, Design Memorandum No. 9, Mark Twain Lake Master Plan, Salt River, Missouri

1. Reference:

- a. ER 1130-2-550, Chapter 3: Project Master Plans and Operational Master Plans, approved 15 August 2002
- b. EM 1110-1-400, Engineering and Design: Recreation Facility and Customer Services Standards, 1 November 2004 – All proposed facilities will be in compliance with this regulation.
- c. Mark Twain Lake Master Plan, Design Memorandum No 9, Salt River, Missouri, 2004

2. Purpose: Supplement No. 2 to the Mark Twain Lake Master Plan is submitted for review and approval. The purpose of this supplement is to provide facilities that meet public health and safety requirements, reflect current recreation trends and demand, while reducing cost or increasing revenue.

Proposed actions include the replacement, consolidation or relocation of restroom facilities in several recreation areas. In addition, a business center will be added to the Mark Twain Lake Administration Building to accommodate current and future business requirements. These proposals will improve project operational efficiency and maintain project health and safety standards. The relocations of the Robert Allen, South Fork, Stoutsville, and Indian Creek recreation area vault toilets will also be implemented at this time and are approved in the current master plan.

3. General Description: Several of the facilities addressed in this supplement were inundated and significantly impacted by recent flood events. The proposed actions would relocate facilities out of the flood zones when feasible. Design typicals for proposed restroom facilities are shown on Plates 8 and 9.

a. Warren G. See Spillway Recreation Area (Plates 1 & 2): This recreation area is located on the north and south sides of the spillway and is accessed by Highway J. The area features opportunities for many day use recreational activities including sightseeing, fishing, and picnicking.

Facilities in the Warren G. See North Spillway Recreation Area include 1 vault toilet, 1 vault comfort station, several combination fountain/hydrants, 57 parking spaces, 5 universally accessible parking spaces and a playground. A parking area is provided for visitors to the Cannon Dam Power Plant Exhibit Area.

Recreational facilities in the Warren G. See South Spillway Recreation Area include a 2-lane boat launching ramp, a vault toilet, a vault comfort station, an overlook, several combination fountain/hydrants, a playground, 45 parking spaces, 7 universally accessible parking spaces, 104 car/trailer parking spaces, a shooting range, and 2 group picnic shelters and a multi-purpose building with a no-discharge waste water infiltration system. This area is utilized as a special event activities area by a variety of groups and organizations.

North Spillway Proposed Actions: The vault comfort station and the vault toilet will be replaced with a single, waterborne comfort station with a wastewater infiltrator type septic system. The vault toilet is approximately 25 years old and in need of major rehabilitation. Discharge release from Clarence Cannon Dam in 2008 reached the foundation of the vault comfort station. The new comfort station will be located on higher ground near the present vault toilet location and will be a prefabricated design that meets ADA and "green" building requirements. Consolidation of the facilities will promote visitor health and safety and decrease future operations and maintenance (O&M) costs. The cost estimate for this action is \$187,500 with contingencies.

South Spillway Proposed Actions: The installation of a waterborne comfort station with showers in the South Spillway is approved in the current master plan. However, due to recent flood damage to the existing vault comfort station and the desire to reduce O&M costs, it is proposed to consolidate facilities by replacing the vault comfort station and the vault toilet with a waterborne comfort station, but without the showers. A wastewater infiltrator type septic system will also be installed to serve the comfort station. The new comfort station will be a prefabricated design that meets ADA and "green" building requirements. Consolidation of restroom facilities will promote visitor health and safety and decrease future O&M costs. The cost estimate for this action is \$187,500 with contingencies.

b. Bluff View Recreation Area (Plate 3): This 45 acre recreation area is located below the Re-regulation Dam and is developed for a variety of day use activities. Improvements in the area include a one-lane boat launching ramp, a group picnic shelter, 2 vault toilets, a playground, 4 picnic sites, and parking spaces for 83 cars and 20 car-trailers.

Proposed Actions: The two vault toilets in this area have been inundated or damaged twice by high water releases from the re-regulation dam. Discharge releases in 2008 severely eroded the river channel embankments in the Bluffview Recreation Area and have jeopardized the vault toilet. To improve O&M efficiencies and reflect the recent downward trend in picnicking activities, the two existing vault toilets will be replaced with a single vault toilet. The replacement vault toilet will be located adjacent to an existing parking lot, away from the river channel, and will be unisex, ADA accessible, and constructed of low maintenance pre-fabricated concrete walls. The cost estimate for replacement and consolidation of the vault toilets is \$52,500 with contingencies. The river channel embankment erosion repair is currently being designed by Engineering-Construction division and is separate from and will not affect this action.

c. Relocation of Vault Toilets (Plates 4 thru 7): The vault toilets located at Robert Allen, South Fork, Stoutsville and the Indian Creek (east ramp) Recreation Areas are located at elevations 632-635 ft. NGVD and have been inundated at least 8 times during various high water events. The inundation frequency coupled with the age of the structures (approximately 30 years) has had a significant effect on the structures. The replacement vault toilets will be located above the flood pool elevation of 638 ft. NGVD, adjacent to existing parking lots and will significantly improve visitor health and safety issues by preventing inundation of the vaults. The new vault toilets will be unisex, ADA accessible, and constructed of low maintenance pre-fabricated concrete walls. The cost estimate for relocation of each vault toilet is \$46,875 with contingencies.

d. Business Center Addition – Mark Twain Lake Administration Building (Plate 10): This action includes a 12' X 24' addition to the Mark Twain Lake Administration Building to serve as

a "business center" for project operations. The current administration building was constructed in 1981 and houses the offices for the administrative staff along with a conference room and an entrance area to greet public visitors. The rest of the staff offices are located in the original "turbine" storage building which has been converted for operations use to include an ancillary shop and maintenance area.

The business center addition is necessary to efficiently arrange office copiers, plotters, printers, scanners, public radio broadcast radio transmitter, an air-gap computer, shredder and environmental paper recycling space, form storage, permanent project files, and office supplies in a central location. Currently, all of these items are fragmented in various locations throughout the two buildings including hallways, personal office spaces, at fire exits and down steps. Due to the expansion of technology, current business practices and methods, lack of adequate space for equipment, unorganized and cramped conditions have developed. Office space is limited to 162 average net useable square feet per employee FTE. Space used by the public is not counted in that total. Logistics management has performed a space analysis of the Mark Twain Lake administration building with the proposed business center and has estimated that there will be 153 average net useable square feet per person. LM concurs with the feasibility of the business center.

The business center addition will bring the office into compliance with the Americans with Disabilities Act Requirements, improve office and personnel efficiency, and improve safety and security of personnel and equipment.

Estimated cost of the business center is \$45,000 with contingencies.

4. Cost Estimate: The total preliminary field estimate of cost for the proposed projects is \$660,000 with contingencies.

5. Environmental Compliance: All environmental compliance requirements will be accomplished before initiation of work on any project. The required district environmental checklist has been initiated, completed, and submitted by CO-J for each of the proposed and previously approved actions. The status of environmental compliance is discussed below for each proposed action:

a. Facility Consolidation / Waterborne Comfort Station - North Spillway: This area is in a previously disturbed area and has been surveyed for cultural resources.

b. Facility Consolidation / Waterborne Comfort Station - South Spillway: This area is in a previously disturbed area and has been surveyed for cultural resources.

c. Facility Consolidation / Vault Toilet Relocation - Bluffview Recreation Area: This area is in a previously disturbed area and has been surveyed for cultural resources.

d. Relocation of Vault Toilets: These areas are in previously disturbed areas and have been surveyed for cultural resources.

e. Business Center: The administration building business center addition is in a previously disturbed area that has been substantially impacted by previous construction, office and storage buildings and road activities.

6. Conclusions: This supplement addresses facility consolidation and replacement necessitated

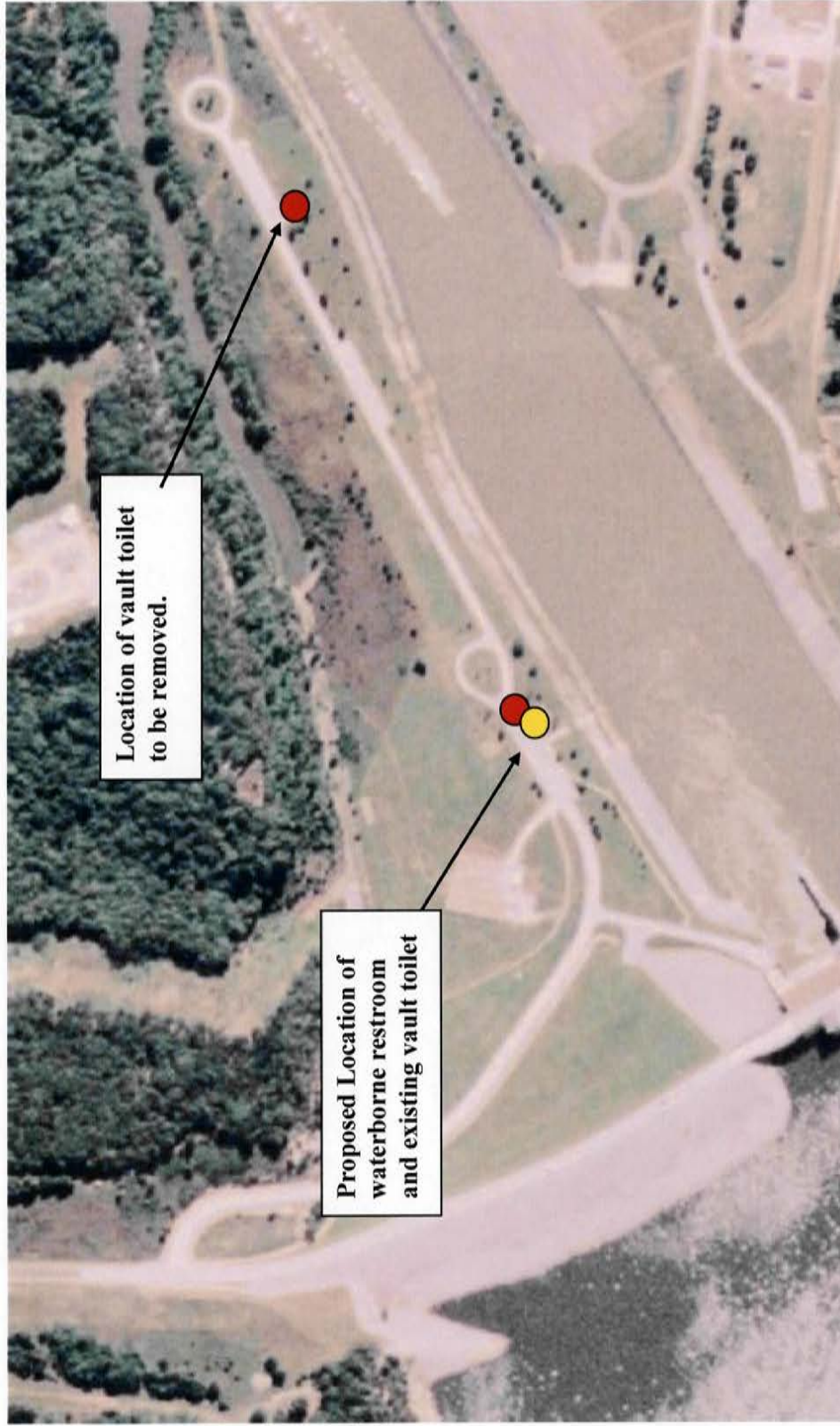
by flood damages, rehabilitation needs, and visitor health and safety. The majority of the facilities described were inundated and significantly impacted by recent flood events. Where appropriate, consolidation will improve visitor health and safety and eliminate future flood damage. Replacement facilities will improve project health and safety, reduce facilities affected by future flood events and reduce future O&M expenses.

The administrative business center addition will consolidate business functions and facilities at the administrative building that will improve the overall efficiency of the administrative office as well as employee safety and security.

7. Recommendations: The proposed facility consolidations, relocations and the administrative business center are in accordance with the Mark Twain Lake Master Plan and Corps regulations. Approval of this supplement is recommended.

Location	Proposed Action	Purpose: New or O&M	Qty	Unit	Cost	Total Cost	Cost (with 25 % contingency)	Funding Source	Environmental Compliance
W.G. See Spillway - North	Replace vault toilets with waterborne comfort station with wastewater infiltrator septic system	O&M	1	@	150,000	150,000	187,500	Flood Recovery Funding	Categorically excluded. Env. checkist completed.
W.G. See Spillway - South	Replace vault toilets with waterborne comfort station with wastewater infiltrator septic system	O&M	1	@	150,000	150,000	187,500	Flood Recovery Funding	Categorically excluded. Env. checkist completed.
Bluffview Recreation Area	Replacement vault toilet	O&M	1	@	42,000	42,000	52,500	Flood Recovery Funding	Categorically excluded. Env. checkist completed.
Stoutsville Recreation Area	Relocate and replace vault toilet	O&M	1	@	37,500	37,500	46,875	Flood Recovery Funding	Categorically excluded. Env. checkist completed.
Robert Allen Recreation Area	Relocate and replace vault toilet	O&M	1	@	37,500	37,500	46,875	Flood Recovery Funding	Categorically excluded. Env. checkist completed.
South Fork Recreation Area	Relocate and replace vault toilet	O&M	1	@	37,500	37,500	46,875	Flood Recovery Funding	Categorically excluded. Env. checkist completed.
Indian Creek Recreation Area	Relocate and replace vault toilet	O&M	1	@	37,500	37,500	46,875	Flood Recovery Funding	Categorically excluded. Env. checkist completed.
Administration Building Addition	Add business center to administration building.	O&M	1	@	36,000	36,000	45,000	O&M	Categorically excluded.





**Area:** Warren G. See North Spillway Recreation Area

**Activity:** Replace two vault toilet facilities with one pre-fabricated, concrete waterborne restroom facility. Install an on-site underground wastewater infiltration system.



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**Plate 1 – Warren G. See North Spillway Recreation Area**



**Area:** Warren G. See South Spillway Recreation Area

**Activity:** Replace two vault toilet facilities with one pre-fabricated, concrete waterborne restroom facility. Install an on-site underground wastewater infiltration system.



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**Plate 2 - Warren G. See South Spillway Recreation Area**





Area: Bluffview Recreation Area

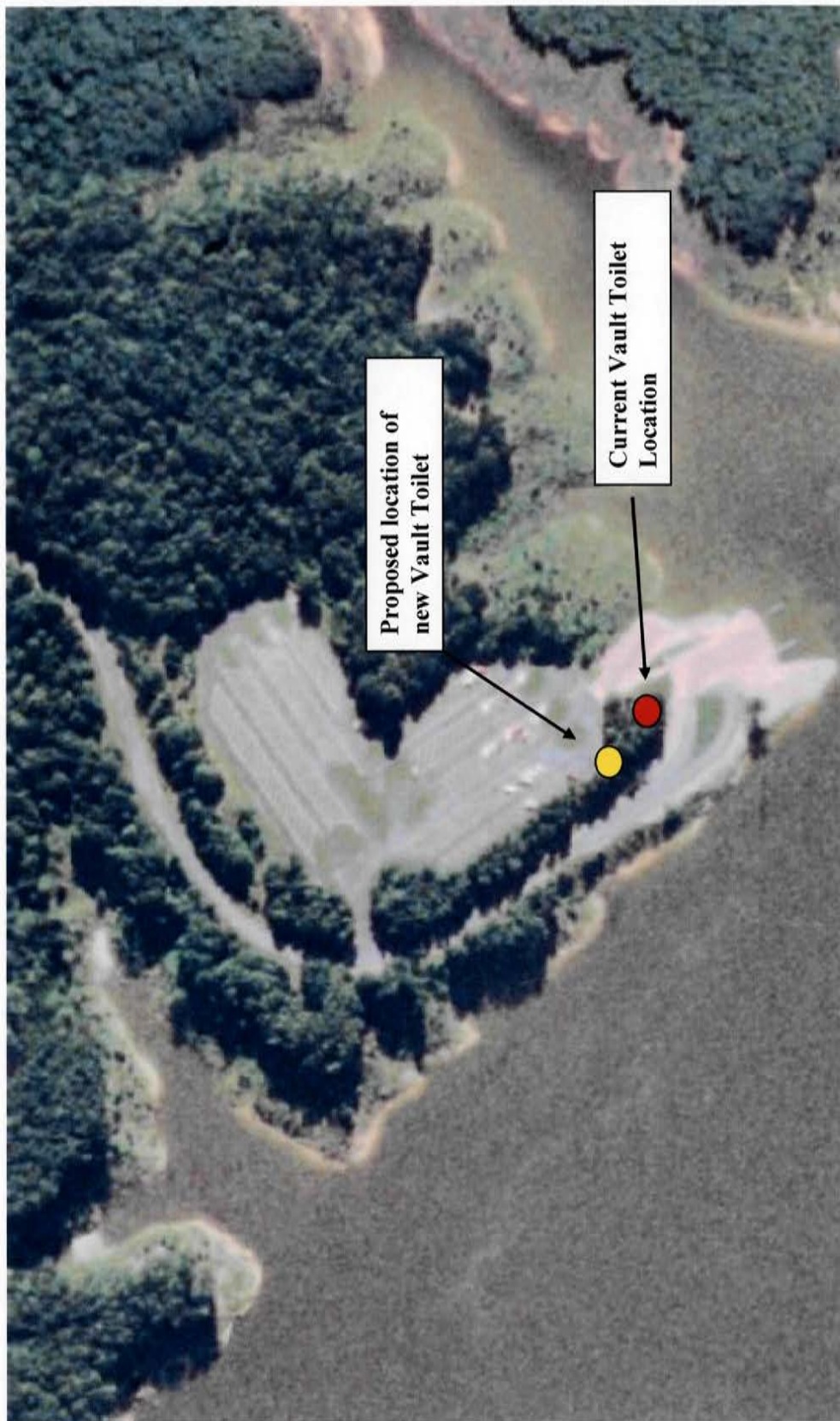
Activity: Replace current vault toilet facility with a pre-fabricated, concrete vault toilet.



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Plate 3 – Bluffview Recreation Area





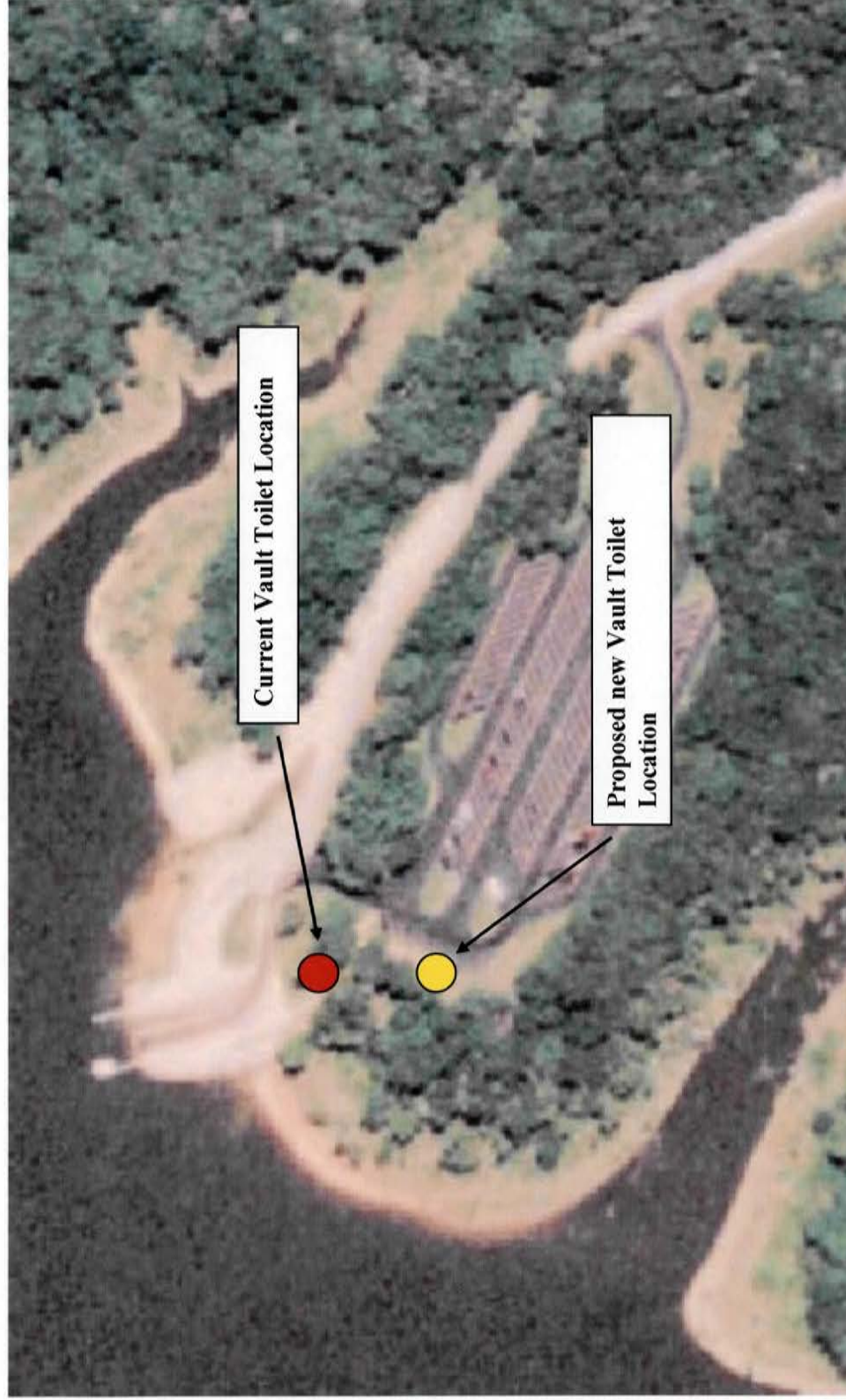
**Area:** Stoutsville Recreation Area

**Activity:** Replace vault toilet facility with one pre-fabricated, concrete vault toilet.



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**Plate 4 – Stoutsville Recreation Area**



**Area:** Robert Allen Recreation Area

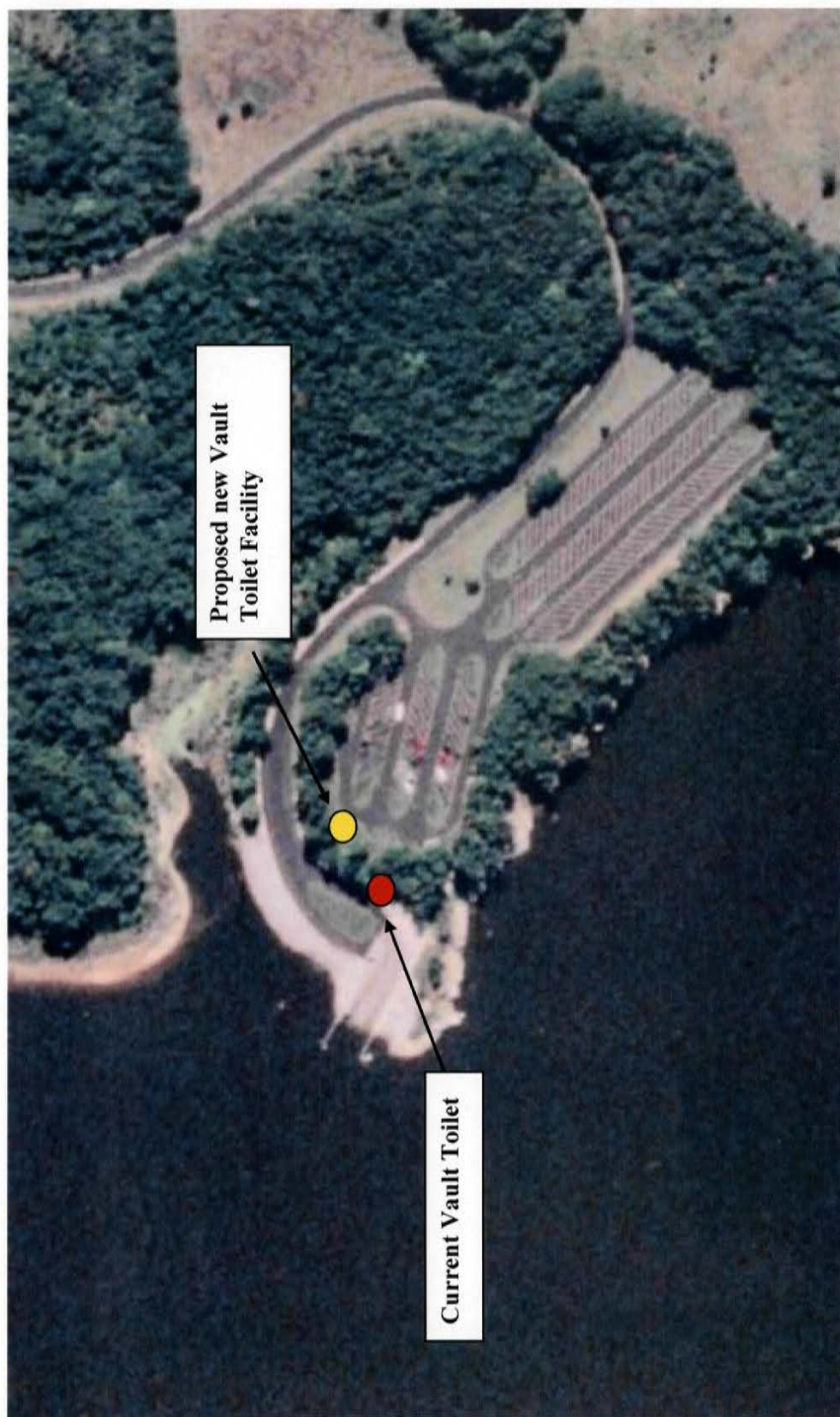
**Activity:** Replace vault toilet facility with pre-fabricated, concrete vault toilet.



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**Plate 5 – Robert Allen Recreation Area**





**Area:** South Fork Recreation Area

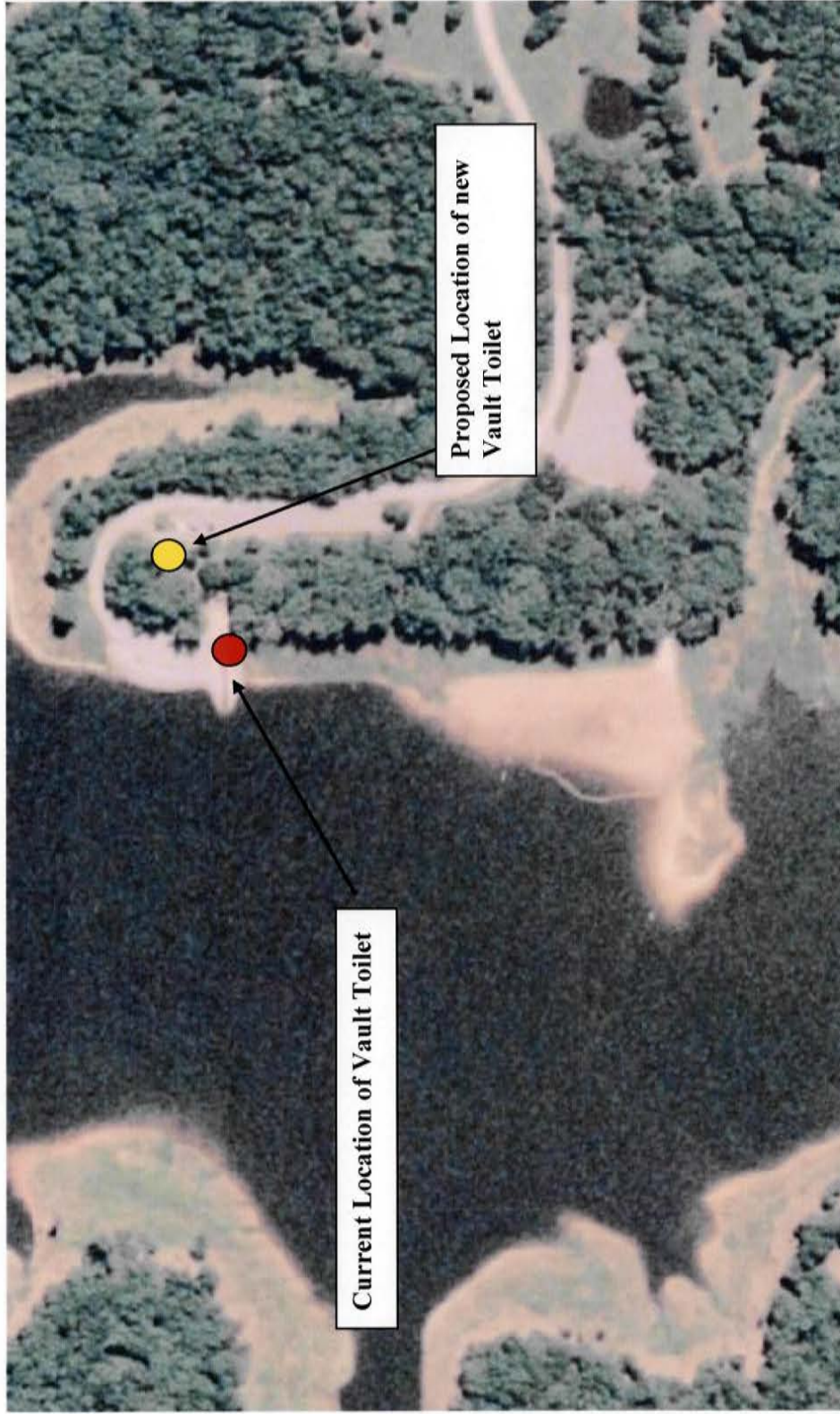
**Activity:** Replace vault toilet facility with pre-fabricated, concrete vault toilet.



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**Plate 6 – South Fork Recreation Area**





Current Location of Vault Toilet

Proposed Location of new  
Vault Toilet

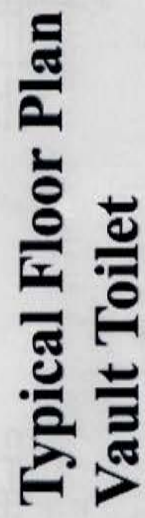
**Area:** Indian Creek Recreation Area East Boat Ramp

**Activity:** Replace vault toilet facility with pre-fabricated, concrete vault toilet.



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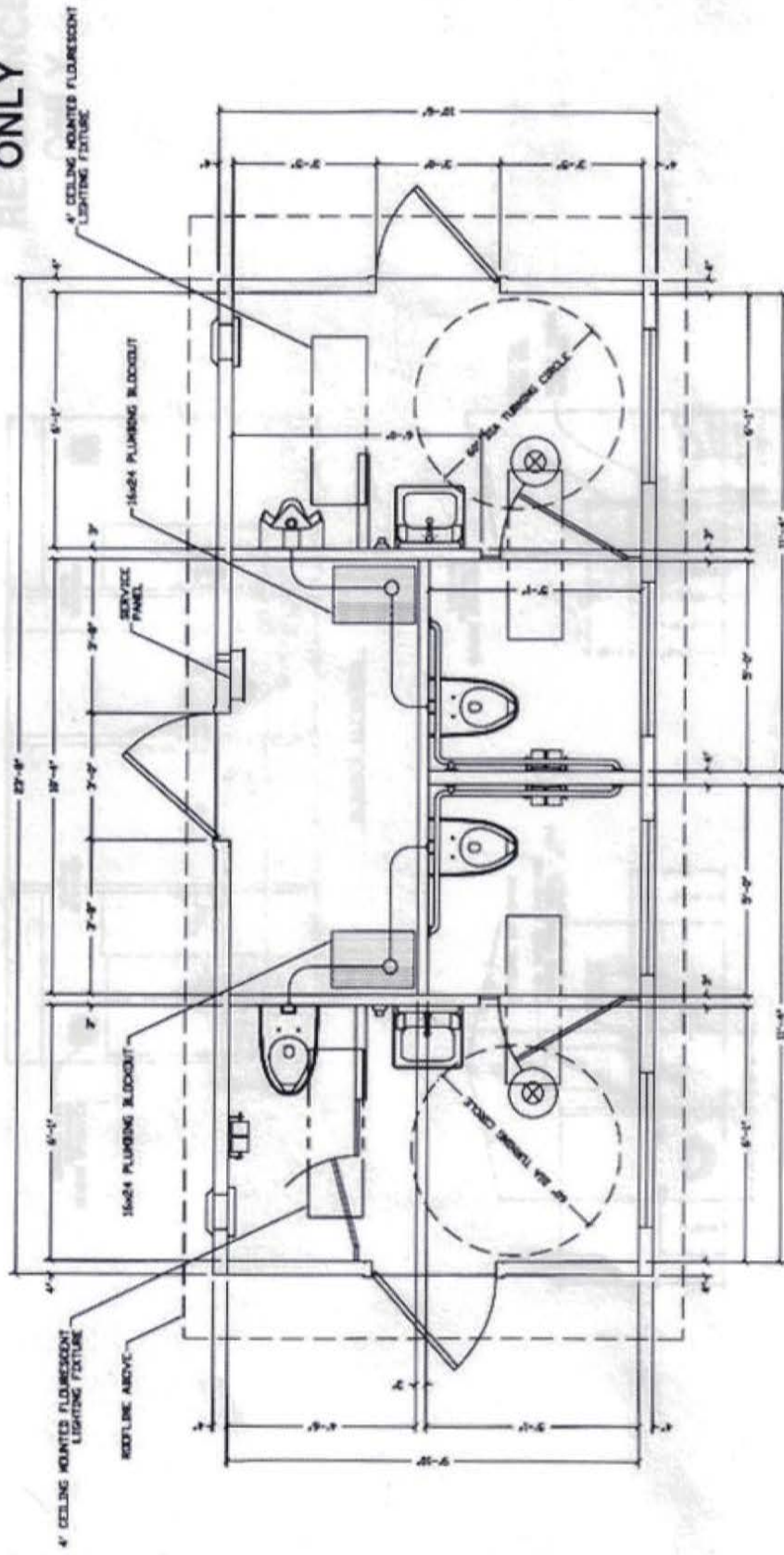
**Plate 7 – Indian Creek Recreation Area**



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**Typical Floor Plan  
Water Borne  
Comfort Station**

Plate 9 – Typical Waterborne Comfort Station Floor Plan





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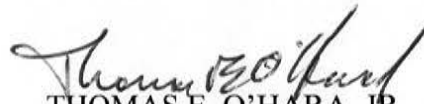
28 MAY 2009

MEMORANDUM FOR CEMVS-PM-E

SUBJECT: Supplement No. 2, Mark Twain Lake Master Plan, Design Memorandum  
No. 9, Salt River, Missouri.

Supplement No. 2 to the Mark Twain Lake Master Plan, May 2009:

Approved X Disapproved                     

  
THOMAS E. O'HARA, JR.  
COL, EN  
Commanding

Enc 3