Options for TTAD Facilities and Resources to Reduce Community Annoyance

Project Fact Sheet

Objective: Discuss the temporary seasonal tower success measurement metrics. Staff will also review other options to reduce noise and annoyance such as Runway 02/20 modifications as outlined in Master Plan as well as leveraging the use of Hangar A9 and Executive Hangars as options to reduce community annoyance by reducing repositioning.

Temporary Tower

- Staff proposes to measure and monitor the following tower operating metrics during the summer operational period:
    1. Route aircraft to the runway using local, pre-published landmarks such as *Landfill, Bypass, Scales, Balloon Track, and Gateway.*(Flight Tracking Data)
    2. Request the aircraft maintain a minimum altitude during approach, *7500 MSL.* (Flight Tracking Data)
    3. Sequence arriving aircraft to reduce go-arounds, holds, and delays which extend flight time and lengthen community noise exposure.(Pilot Surveys)
    4. Assign a preferred runway for departure.(Flight Track/Camera Data)
    5. Assign a preferred departure procedure.(Flight Tracking Data)
    6. Assign a direction and rough course of flight congruent with published noise abatement procedures.(Flight Tracking Data & Community Surveys)
    7. Reduce incursions, loss of separation, communication errors, and conflicts. (Safety Management System Data).
    8. We will track comments including the type of comments received and the issues raised for comparison with and without Control Tower.
- In October of 2017, Staff will analyze and compare track data, camera data, surveys, comments, pilot information and other data to compare the summer 2017 experience from previous summer peak periods to gain insight as to tower performance.

Runway Modifications

- Longer runways allow a wider array of aircraft utilization.

- KTRK is a high altitude airport and pilots prefer a runway with the greatest useable length for safety reasons.
- Displacing, or moving the threshold of a runway changes the height of an aircraft over a given point on the ground based on its climb performance.
- The Board has determined that Runway 02/20 is the preferred runway for reduced community annoyance.
- The masterplan studied a lengthening/widening initiative of runway 02/20, and a displacement of the threshold of runway 11/29. The costs ranged from $3.8 million to $6.8 million.

Hangar A9 and Executive Hangars to Potentially Reduce Repositioning

- Hangars may be used to prevent some operations. It is known that aircraft reposition to Reno to avoid snow, ice, and freezing temps.
- Hangars offer the maintenance provider additional capacity that may prevent some aircraft from leaving the airport to receive maintenance.
- Renting a hangar to an operator who has flights originating in Truckee while based elsewhere may reduce operations.
- A9 is the only "free and open" space the District has right now for any aero storage needs.

Signatory Agreements

- The District can enhance the use of Signatory Agreements with Charter and 91K Operators to contractually agree to comply with District NAPs, curfews, and safety programs. District currently has one Signatory Agreement with Surf Air.

Attachments:

1. Tower guide to community arrivals and departures
2. Tower Community Measurements of Success
3. Tower Safety Measurements of Success
4. Progress and Timeline for Airport Control
5. Noise Abetment Procedure Maps
6. Public Comment Regarding Repositioning of Aircraft at KTRK
7. Top Ten city pairs data Mike Cooke
8. Page 4-2 2014 Airport Master Plan

Tower Guide to Community Arrivals & Departures
Attachment 1

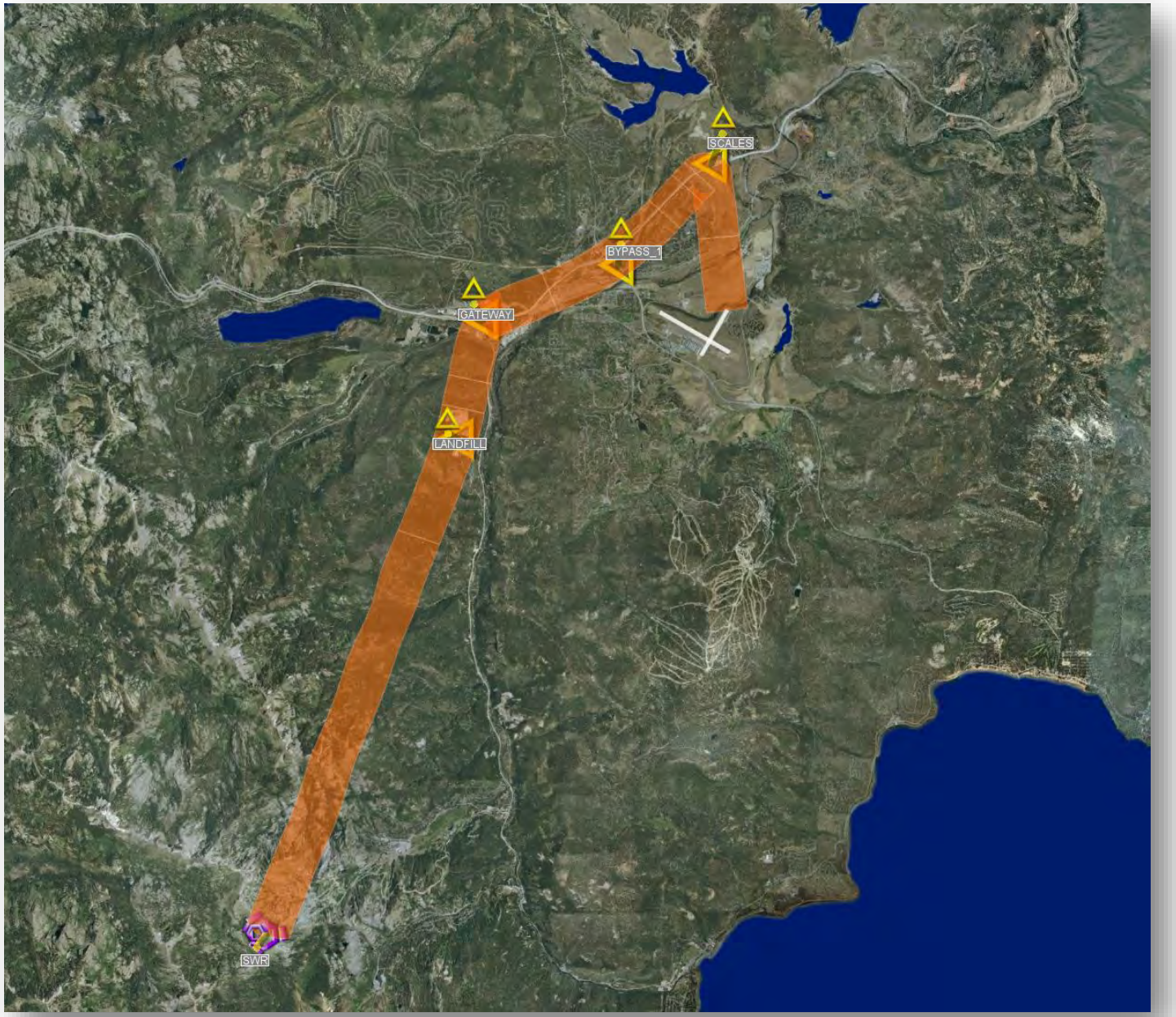
- For Board/Staff/Public Discussion.
- Based on existing noise abatement procedures.
- Constructed with GIS data from Airspace Phase I Bridgenet 2016.
- Designed to reduce residential overflight and reduce annoyance.
- Designed to give the tower supervisor direction on community friendly arrivals and departures.
- Only used for visual references, tracks approximated, altitude not advised.
- Potential to “tighten” paths exists if the paths are used for procedures outlined in the Airspace Study.

Runway 20 Arrival

For South and West arrivals the Tower may instruct an aircraft to:

“Cross the LANDFILL and follow highway 80 to the SCALES then join final approach runway 20”
Or
“Cross GATEWAY and follow highway 80 to the SCALES then join final approach runway 20”

**Arrivals from North & East would be directed over SCALES then direct final entry for runway 20



Runway 29 Arrival

For North, South, and West entry the Tower may instruct an aircraft to:

“Cross the GATEWAY join downwind runway 29”

For East entries the tower may instruct an aircraft to:

“Join final/base for runway 29”

Runway 29 Arrival – 45 Pattern Entry

For South and West entry the Tower may instruct an aircraft to:

“Cross the LANDFILL join the 45 left traffic runway 29”

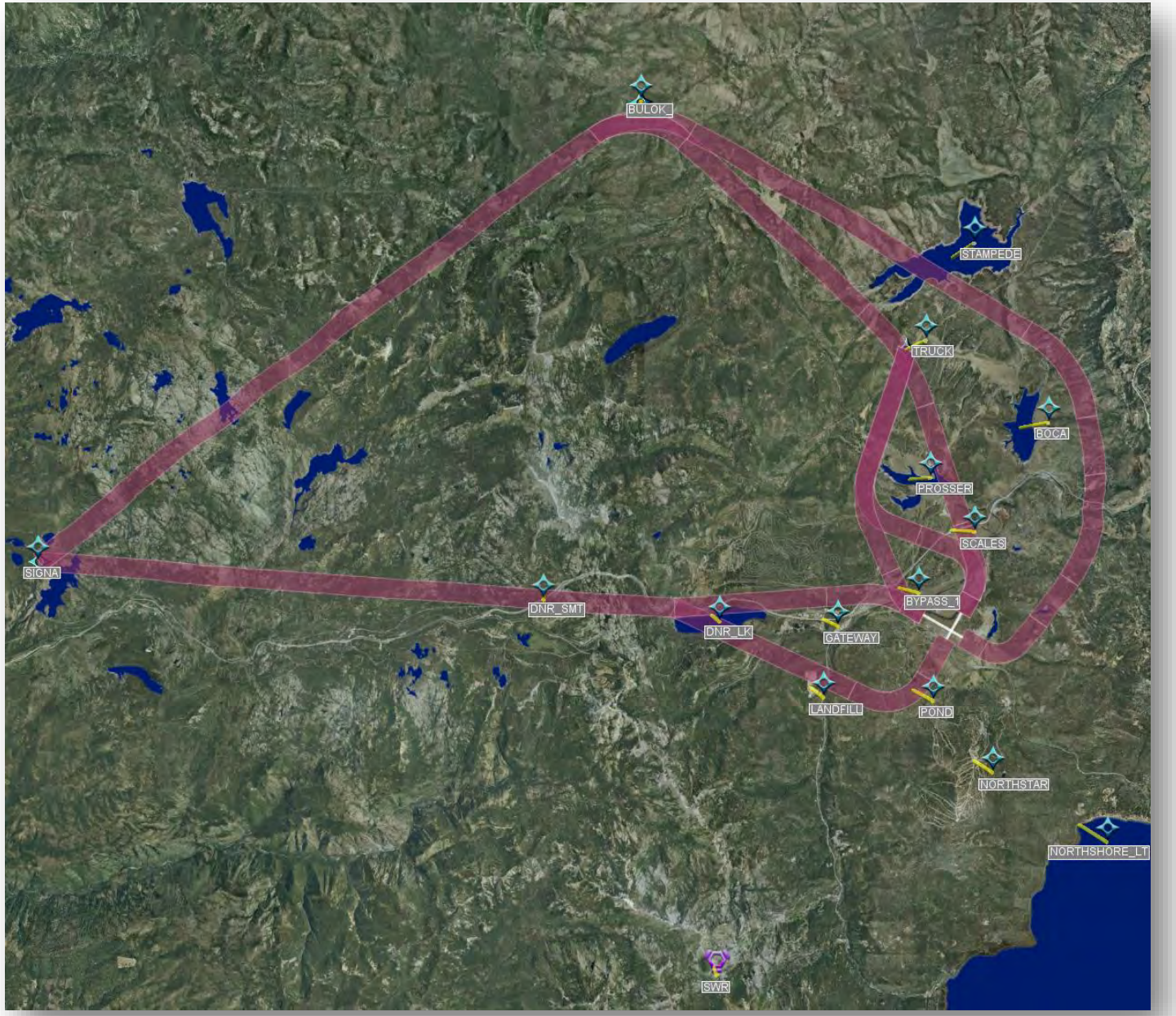
Runway 29 Arrival – Left Overhead

For North entry the Tower may instruct an aircraft to:

“Cross the SCALES then report midfield for a left overhead runway 29”

KTRK Reporting Points and paths

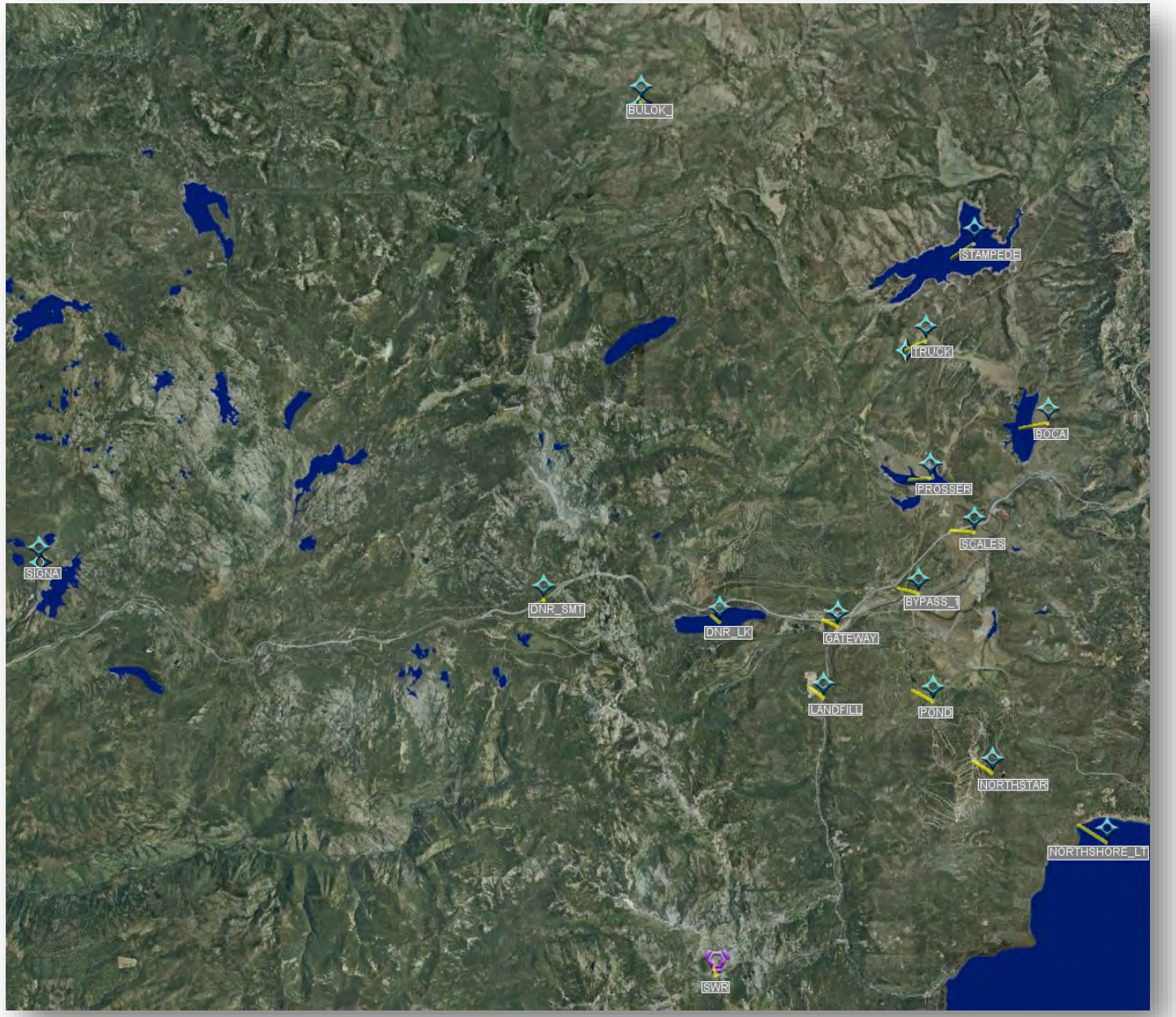
- Aircraft use visual references for departures from all runways. Possible instrument reporting points.
- Departure reporting points
    - Signa
    - Donner Summit
    - Donner Lake
    - Landfill
    - Gateway
    - Bypass
    - Pond
    - TRUCK intersection
    - Scales
    - Northstar
    - Northshore Lake Tahoe
    - Boca
    - Prosser
    - Stampede
- Departure reporting points in KTRK



TRK Reporting Points

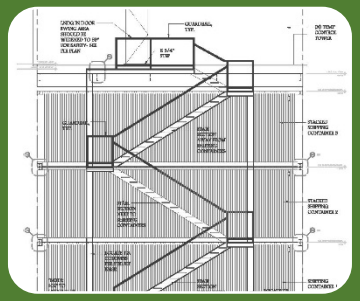
- Aircraft use visual references for departures from all runways. Possible instrument reporting points.
- Reporting Points
  - SIGNA
  - Donner Summit
  - Donner Lake
  - Landfill
  - Gateway
  - Bypass
  - Pond
  - TRUCK intersection
  - Scales
  - Northstar
  - Northshore Lake Tahoe
  - Boca
  - Prosser
  - Stampede

- Reporting points in TRK Airspace study
  - BULOK



Tower Community Measurements of Success

Attachment 2

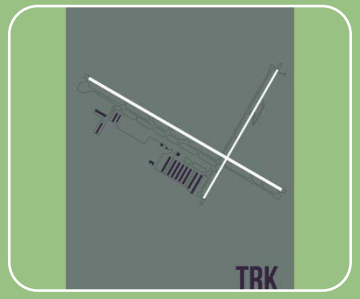


Flight Tracks

- Goal: Follow the established noise procedures
- Metric: Gate analysis, comments, pilot surveys

Curfew

- Goal: Reduce 10-7 Operations
- Metric: # of non-EMS curfew operations

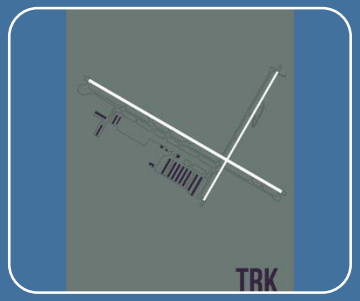


Calm Wind Runway

- Goal: Drive traffic onto runway 02/20
- Metric: Runway utilization data, IFR data

Tower Safety Measurements of Success

Attachment 3

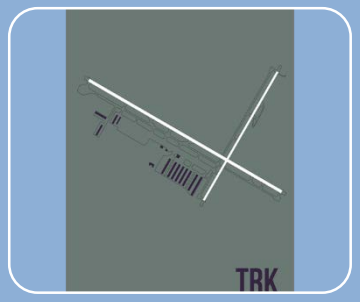


Runway Incursions

- Goal: Reduce runway incursion
- Metric: SMS data, pilot surveys

Radio Communication Error

- Goal: Reduce errors related to frequency saturation
- Metric: SMS data, pilot surveys



Near Mid Air (NMAC) Loss of Separation

- Goal: Reduce NMAC or reports of loss of separation
- Metric: Pilot surveys, SMS, FAA d.b.

Progress and Timelines for Airport Control

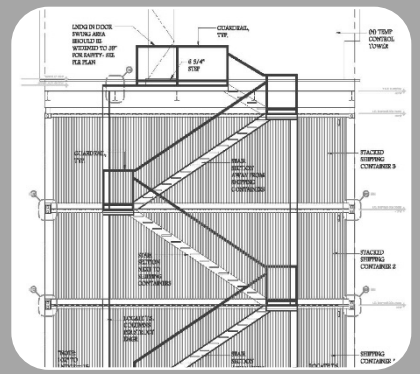
Attachment 4

Procedures

- Instrument procedures & Visual procedures
- Airspace Phase II, Obstruction Survey, Class D
- 2019 and 2020

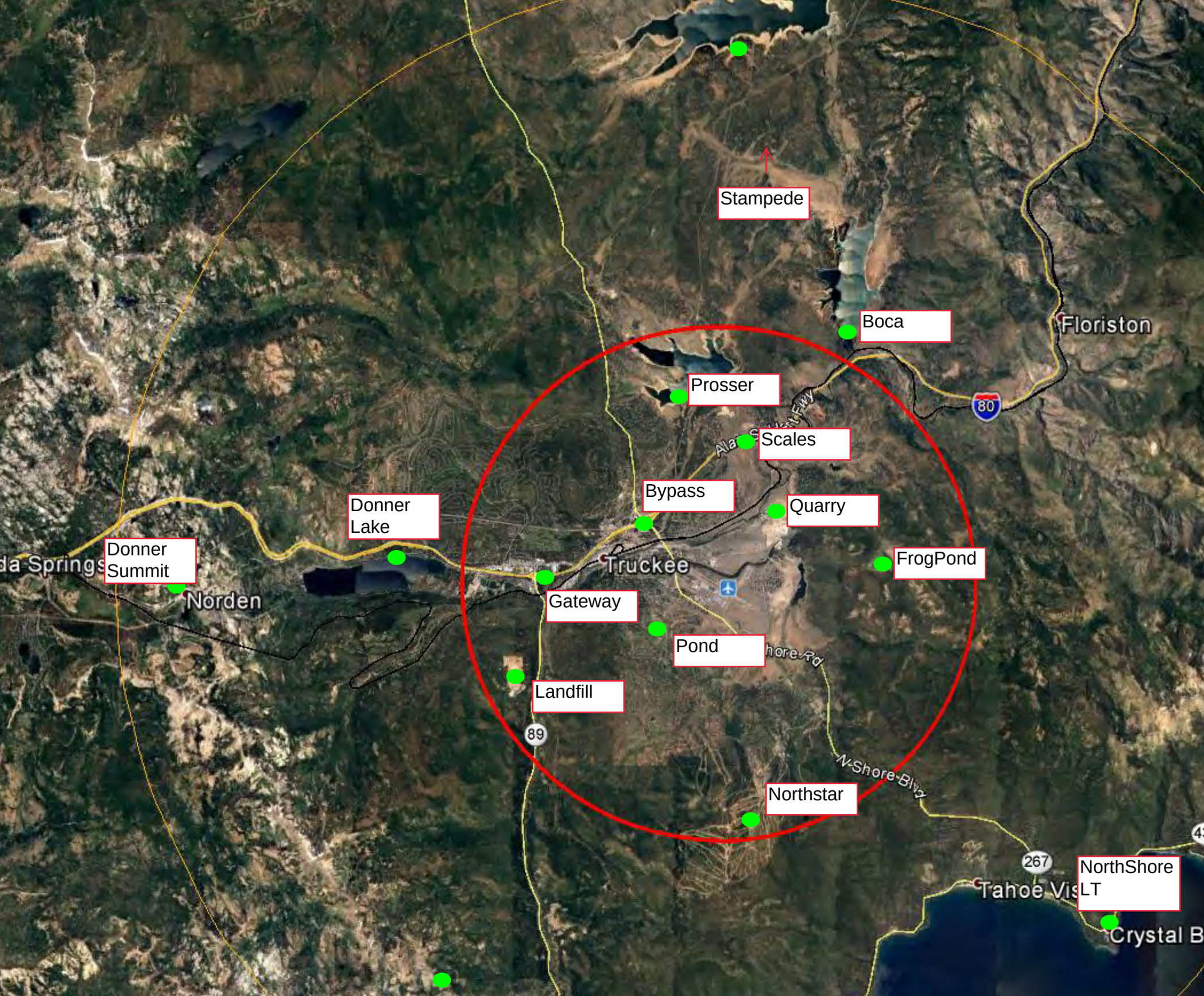
Surveillance

- MLAT Authorization in process until 2020
- ADSB: Congressman McClintock, FAA, Harris, Staff
- Budget FY 2018/2019 $500K



Tower

- March Construction
- April Certification
- June – September 2017 Operation


Stampede
Boca
Floriston
Prosser
80
Scales
Bypass
Quarry
Donner Lake
Donner Summit
Truckee
FrogPond
Norden
Gateway
Pond
Landfill
89
N Shore Blvd
Northstar
267
NorthShore LT
Tahoe Vis
Crystal B

Attachment 6

To the Board of Directors at the Truckee Tahoe Airport **March 12, 2017**

Public Comment regarding repositioning of aircraft at KTRK

I would like to provide the board with information on the services we offer at Sierra Aero LLC, in particular those that reduces repositioning flights in and out of KTRK.

1. The Cirrus SR2x series is one of the bestselling aircraft today. Due to the increased number of these airplanes hangered on the field, we approached Cirrus Aircraft in early 2016 to see if we could work towards becoming an Authorized Cirrus Service Center (ASC). We did see three huge benefits; 1: we could order parts directly from Cirrus which would be more affordable for the owner, 2: we could work on newer aircraft still under warranty, and 3: we would increase our local client base and ensure more work for us and hopefully tie us over during the slower months. When we opened up in 2012, there were 2 Cirrus aircraft located on KTRK. Today, we have 13 Cirrus owners with hangars on the field, with another 6 on the waiting list. We can give them all the option of having maintenance, oil changes, and annuals done right here instead of ferrying the aircraft to another ASC. It's hard to put a number on the reduction in operations, but since we finalized the process with Cirrus in December of 2016, we have already scheduled 5 annuals for early 2017, processed approx. 10 warranty work orders on local aircraft, and performed numerous non-warranty services. Each annual with ferry flights to another ASC would result in 6 operations, so we know we omitted at least 30 operations just on those annuals we have scheduled. This service ties into the A9 discussion; the wider wingspan makes it hard for us to fit these aircraft in Hangar #1 where space is tight. A9 would help us improve our capability to work on more local aircraft.

2. We are currently working with the FAA in Reno towards our Limited Part 145 certification, for a qualification to do transponder and pitot static system checks. Every aircraft needs those two components checked every 24 months according to Part 91.411 and 91.413. Currently, the closest place is in Stead, NV. As far as we are aware, this service has never been provided in Truckee. We just invested in the equipment in January of 2017, which cost us over $25,000. Since a transponder check runs about $140, it is probably not an investment that will pay off any time soon, but we believe that we can offer our customers a lot of value in the convenience of having those checks done on their home field. This will also reduce operations for the airport.

3. Although not legally required for Part 91 maintenance, we made the decision approx. 1 year ago, to enroll in the FAA Drug Testing Program. This will also allow us, if the need arise, to work on Part 135 aircraft. All our mechanics (4, including Jeff) are on this program.

4. Another purchase we did a while back was our O2 cart, which enables us to service aircraft with O2. This is another example of a service that required us to invest money in something that doesn't generate much revenue, but is valuable to our customers on the field.

It is our goal as an aircraft maintenance facility to provide our local, hangered aircraft with as many services as we can. This will make us as a business sustainable, save time/money for customers, and lessen operations in and out of KTRK. We would be more than happy to further discuss/explain if the board members have questions.

Regards,

Jessica Fay

Owner/Manager

Sierra Aero LLC

jessica@flytruckee.com

530-359-8751

SIERRA
AERO

Attachment 7

From: Mike Cooke
To: Kevin Smith; Hardy Bullock
Subject: January City Pair Data
Date: Wednesday, February 01, 2017 10:41:39 AM

I have Flight Aware sending me city pair data now and then. They're only getting filed flights so their list of 633 is about half of our actual operations for Jan but interesting to see the filed pairs. I edited it down to the Top 10 From & To

I took the top 10 Origin and destination cities and put them in a pivot table.

		DESTINATION											
		KTRK	KSJC	KSQL	KOAK	KPAO	KSFO	KDVO	KCCR	KVNY	KLVK	KHWD	Total
ORIGIN	KTRK	26	34	24	19	18	14	14	11	10	8	8	186
	KSJC	27											27
	KPAO	20											20
	KOAK	17											17
	KSQL	16											16
	KSFO	15											15
	KDVO	14											14
	KCCR	10											10
	KHWD	10											10
	KRNO	10											10
	Total	165	34	24	19	18	14	14	11	10	8	8	325

Bay area airports in general, and San Jose in particular is our biggest city pair for Jan. This is not really earth-shattering but I thought you might like to see it. It looks like it may support 10 Reno repositions.

Michael Cooke
Aviation & Community Services Manager
Truckee Tahoe Airport District
10356 Truckee Airport Road
Truckee, California 96161
530.587.4119 ext 108 .2984 fax

Attachment 8

2. OVERFLIGHT MITIGATION ALTERNATIVES

Community outreach efforts identified residential overflight annoyance as a primary concern to be addressed by this master plan. Among the specific concerns are: loudness of individual operations, repetitive frequency of overflights, and visual impacts related to aircraft (particularly jets) at low altitude.

To address these community concerns, the master plan study evaluated options in accordance with what TTAD can control directly (such as the physical layout of the airfield) and what can be influenced (e.g. incentives, outreach, etc.). In this way, alternatives were developed and proposed as follows: runway alternatives, enhanced flight control and advisory options, other policy and incentive programs, and off-airport mitigation.

2.1 Runway Alternatives

A total of six runway alternatives were identified. Two alternatives were eliminated during preliminary investigations. The remaining four were evaluated in detail. Two alternative scenarios involve primary Runway 11-29 and the potential to shift the runway ends to help reduce noise and overflight impacts on residential areas immediately west of the approach end of Runway 11. The other two alternative scenarios involve changes to secondary Runway 2-20 with the hopes of enticing aircraft to operate on this runway more often. One alternative is recommended for implementation. The four alternatives evaluated in detail are summarized in **Figure 4-1** Alternative Matrix.

DISMISSED RUNWAY OPTIONS

Described briefly in this section are two runway options that were identified but eliminated early during initial investigation.

New Runway Concept. This alternative involves the development of a new runway. Generally the alignment would be established by 1) minimizing residential overflight, 2) providing clear arrival and departure paths avoiding mountainous terrain, and 3) optimizing airport property usage to obtain sufficient runway length to maximize its utilization. The alternative was eliminated on the basis of cost (estimated at $27 million to construct). The inability to avoid wetland impacts was also a consideration. Though not specifically quantified, other concerns were highlighted as well. The alignment of this runway was not favorable for prevailing winds. Comparatively long taxi times would likely dissuade its use if the two existing runways were to remain operational. Likewise, a third runway arrival and departure stream would add additional traffic convergence risk. Finally, the additional runway would increase pavement maintenance costs considerably.

Extend Runway 2-20 North. A major barrier to increasing the utilization of Runway 2-20 is its length. Additional length can be provided to the north or south ends of the existing runway or at both ends. Mountainous terrain obstructs the southern flight corridor. The north corridor is comparatively clear. However, extending to the north is complicated by a steep drop of 100 feet at the runway's north end. Two options are available to extend the runway north: fill the ridge with new material or bridge over using pylon support structures. The incremental cost of providing additional length was deemed prohibitive—between $5 and $15 million for about 350 feet of additional length.

Alternative 1 – Runway 11-29 Modification

The purpose of Alternative 1 is to shift aircraft operations to the east so that aircraft are higher above the residences west of the airport. It consists of two sub-alternatives: 1A and 1B. Alternative 1A extends the runway east while retaining all existing pavement and landing thresholds. Alternative 1B removes pavement at the west end to retain the current runway length. Alternative 1A is illustrated in **Figure 4-2**, and Alternative 2A in **Figure 4-3**.

ALTERNATIVES:	ALTERNATIVE 1A		ALTERNATIVE 1B		ALTERNATIVE 2A		ALTERNATIVE 2B	
Description	Extend Runway 11-29 1,322' east with 1,332' displaced threshold at both runway ends.		Extend Runway 11-29 1,322' east with 874' displaced threshold on Runway 29 only.		Extend Runway 2-20 south to 5,000' with 556' displaced threshold on Runway 2 and widen to 100'.		Widen Runway 2-20 to 100'.	
Airfield Impacts								
Runway Length	8,322'		7,000' (No Change)		5,000'		4,650' (No Change)	
Runway Width	100' (No Change)		100' (No Change)		100'		100'	
Declared Distances	Runway 11	Runway 29	Runway 11	Runway 29	Runway 2	Runway 20	Runway 2	Runway 20
TORA	8,322'	8,322'	7,000'	7,000'	5,000'	4,444'	None	None
TODA	8,322'	8,322'	7,000'	7,000'	5,000'	5,000'		
ASDA	8,322'	8,322'	7,000'	7,000'	5,000'	5,000'		
LDA	7,000'	7,000'	7,000'	5,678'	4,444'	4,945'		
Taxiways	Extend Taxiway A east 1,322' to new end of Runway 29.		Extend Taxiway A east 1,322' to new end of Runway 29. Reduce Taxiway A at new approach end of Runway 11.		Offset Taxiway G, for new design category.		Offset Taxiway G, for new design category.	
Runway Safety Area Standards	Declared Distances used to satisfy RSA requirements.		Declared Distances used to satisfy RSA requirements.		Declared Distances used to satisfy RSA requirements.		No Change	
Impacts to Airport Property Use	Reduction in available building area west of relocated approach end of Runway 11 due to RPZ and approach surface shift.		Reduction in available building area west of relocated approach end of Runway 11 due to RPZ and approach surface shift.		Minor. Runway visual zone would shift slightly limiting hangar build out at east and of apron.		No significant change.	
Off-Airport / Community Impacts								
Over flight Impacts	Increased height of aircraft departing Runway 29 and arriving on Runway 11 would reduce overflight impacts west of Airport. Potential increase in aircraft weights / range.		Aircraft would depart on a lengthened Runway 29 allowing greater altitude when overflying nearby residences west.		Increased utilization for departures on Runway 2.* Increased utilization or Runway 2-20 by all aircraft classifications* *-assumes RW 11-29 is not extended.		Possible increase in utilization of Runway 2-20 by all aircraft classifications* *- Decreased utilization if Runway 11-29 extended.	
Community Noise	See Single Event and Grid Analysis Graphics							
Impacts to Off-Airport Land Use Zones	Increased restrictions east.		Increased restrictions east and reduced restrictions west.		No Change		No Change	
Aeronautical Factors								
Construction impacts to airport operation (e.g., downtime, temporary changes, etc.)	Nighttime work inside RSA – 2 months (Rwy 11-29 closed at night). Daytime closure up to 7 days. Airport closed for 36 hours.		Nighttime work inside RSA – 2 months (Rwy 11-29 closed at night). Daytime closure up to 7 days. Airport closed for 36 hours.		Nighttime work inside RSA – 2.5 months (Rwy 11-29 closed at night). Daytime closure up to 7 days. Airport closed for 36 hours.		Nighttime work inside RSA – 2.5 months (Rwy 11-29 closed at night). Daytime closure up to 4 days. Airport closed for 36 hours.	
Runway Protection Zone	Runway 11 departure RPZ crosses Martis Creek Road. Requires FAA approval.		RW 11 departure RPZ crosses Martis Creek Road. Requires FAA approval. Relocated RW 29 app RPZ crosses Martis Road- requires FAA approval.		With declared distances, Hwy 267 removed from Rwy 2 RPZ. Portion of Rwy 20 RPZ remains off property.		No changes. Highway 267 would remain inside Rwy 2 RPZ. Portion of Rwy 20 RPZ remains off property.	
Potential Property Acquisition (RPZ compliance)	10.0 acres (Runway 29 RPZ)		10.0 acres (Runway 29 RPZ)		11.4 acres (Runway 2 RPZ)		11.4 acres (Runway 2 RPZ)	
Attract Larger Airplanes and Operating Weights and Range	Possible with longer published runway length for Runway 11-29.		Not likely since Runway 11-29 would remain the same length, while reducing LDA on Runway 29.		Possible with longer published runway length and width for Runway 2-20. However, the extension will not result in a runway longer than 11-29, meaning the longest runway at TRK would remain unchanged.		Not likely since Runway 2-20 would remain the same length.	
Effect on All-Weather Capabilities	No Change		No Change		No Change		No Change	
Effect on Night Operations	None. No new instrument lighting proposed.		None. No new instrument lighting proposed.		None. No new instrument lighting proposed.		None. No new instrument lighting proposed.	
Critical Airspace Approach and Departure Surface Considerations	No Change to instrument approach capabilities.		No Change to instrument approach capabilities.		No Change to instrument approach capabilities.		No Change to instrument approach capabilities.	
NAVAIDs	No Change		No Change		No Change		No Change	
Environmental Impact Potential								
Wetlands	Minor or No Impact.		Minor or No Impact.		Potential impact to wetland south of Rwy 2-20. Connection of ditch may be practical to mitigate by culverting.		None	
Earthwork / Fill	18,500 CY		18,500 CY		62,500 CY		None	
Impervious Surfaces (Runways and associated Taxiways)	23,700 SY of additional pavement. (includes extension to Twy A)		23,700 SY of additional pavement. (includes extension to Twy A)		18,778 SY of additional pavement. (does not include Txw G improvements)		13,100 SY of additional pavement. (does not include Txw G improvements)	
Construction Costs								
Estimated Costs (Design, Build and Environmental)	$6.1 Million		$6.1 Million		$6.8 Million		$3.4 Million	

Figure 4-1 RUNWAY ALTERNATIVE MATRIX