



Lean 6-Sigma Program

DEPARTMENT OF TOXIC SUBSTANCES CONTROL



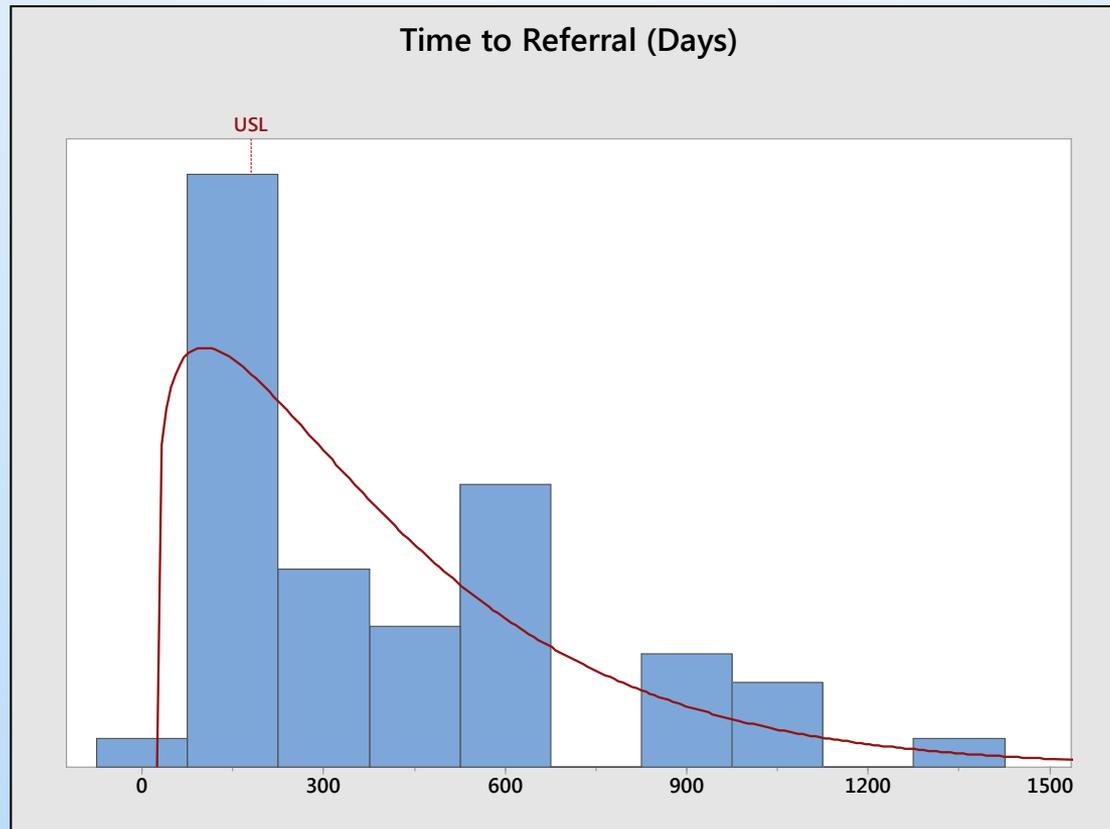
TARYN STOKELL BUCK
(Project Greenbelt)

REED SATO
(Project Champion)

Referral Improvement Process Initiative

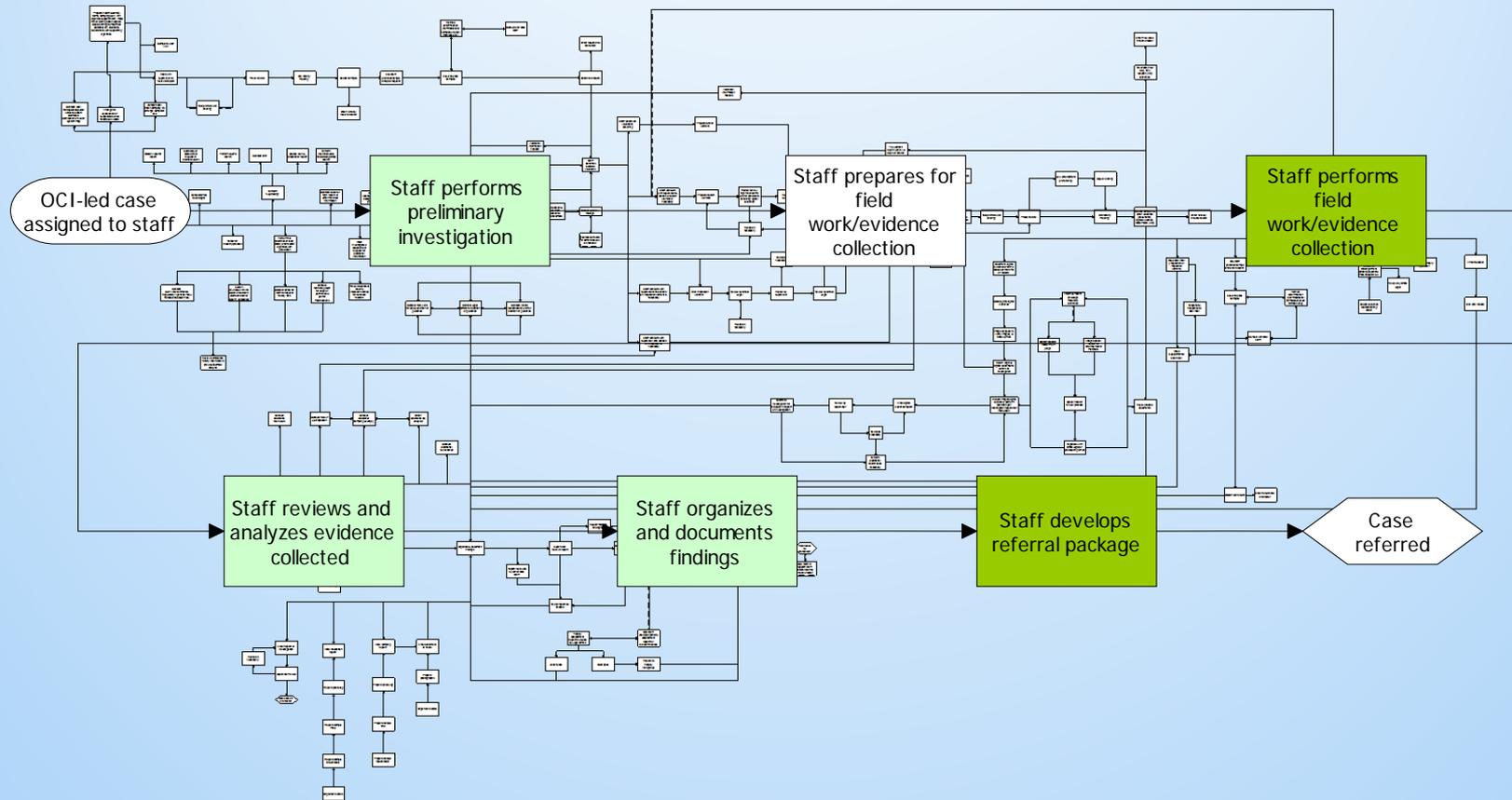
- ❖ **Problem Statement:** Over the past ten years, the average amount of time for a case to be investigated by OCI and referred to a prosecutorial agency has more than tripled from under 5 months to 1.5 years. As this timeframe has grown, the number of cases referred annually has decreased by 75 percent.
- ❖ **Objective:** To refer 95 percent of cases within 6 months while maintaining the level of attention to detail that is required for a successful prosecution.
- ❖ **Project Team:**
 - ❖ *Reed Sato – Project Champion*
 - ❖ *Taryn Stokell Buck – Green Belt*
 - ❖ *Enrique Baeza – Team Member*
 - ❖ *Antonia Becker – Team Member*
 - ❖ *Jay Cross – Team Member*
 - ❖ *Ed Doty – Team Member*
 - ❖ *Catherine Gallardo – Team Member*
 - ❖ *Brett Morris – Team Member*
 - ❖ *Carol Wortham – Team Member*

Baseline Capability



- ❖ Current Average – 406 days; Current Maximum – 1395 days
- ❖ Percent with Goal – 28%

Initial Process Map



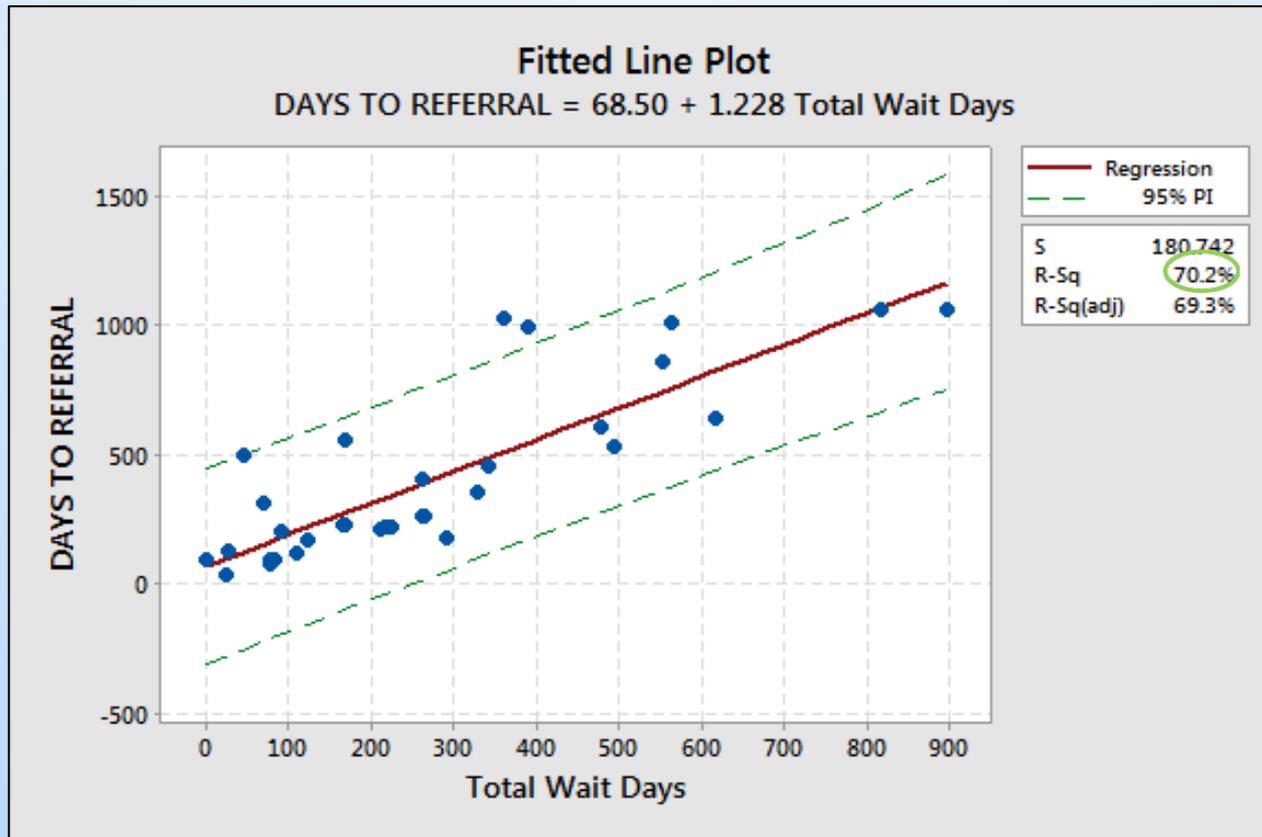
- ❖ Non-value added steps are highlighted in white; value added steps are highlighted in dark green and partially value added steps in light green.

Analysis Tools

- ❖ Process Map
- ❖ Fishbone Diagram
- ❖ FMEA
- ❖ Box Plots
- ❖ Multi-Variable Analyses
- ❖ Mood's Median Tests
- ❖ Process Map Time Analysis
- ❖ Time Value Chart
- ❖ Work In Process Analysis
- ❖ Pareto Charts
- ❖ Linear Regression



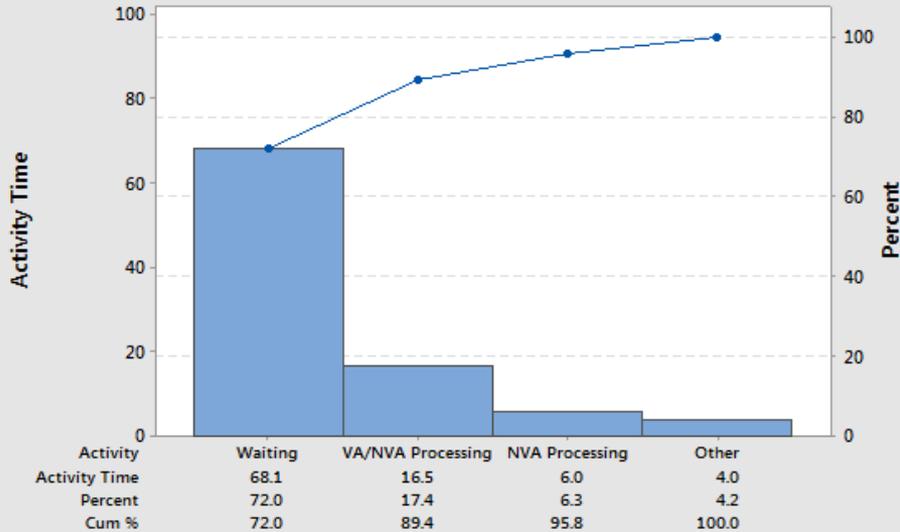
Key Analytical Finding 1



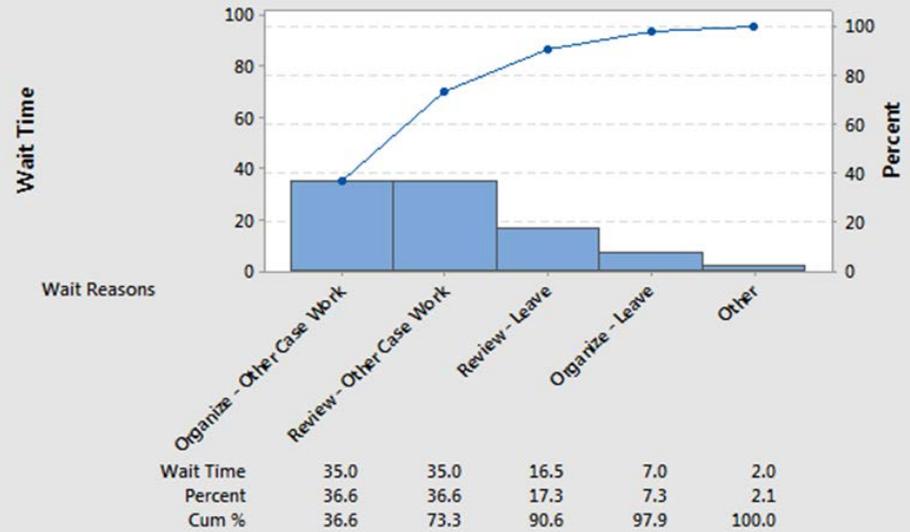
- ❖ The relationship between time to referral and wait time ($R^2 = 70.2\%$) is stronger than time to referral and work time ($R^2 = 57.3\%$). However, the range of predicted time to referral based on wait time is approximately one year.

Key Analytical Finding 2

Pareto Chart of Activity



Pareto Chart of Wait Reasons



- ❖ The total time to referral is primarily composed of wait time (72%), followed by non-value added processing (up to 24%). This wait time is mainly due to staff redirecting their focus to other cases, especially after the field work component of an investigation has been completed.



Critical X's (root causes of problems)

- ❖ Competing case work redirects staff prior to completion of an investigation or step in an investigation
- ❖ Staff vacancies or extended leave
- ❖ NVA processing extends the time to complete the investigation and prepare the referral package
- ❖ Search warrants take more time to refer regardless of the amount of wait time
- ❖ Completion times are greater than takt time for multiple steps in the investigation process
- ❖ Work in process increases after the field work steps in an investigation



Improvement Techniques

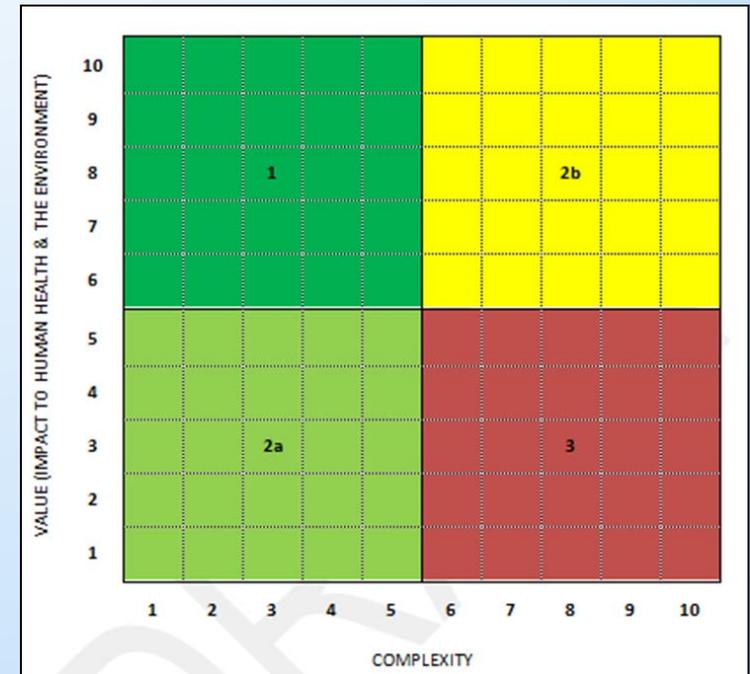
❖ Value vs Complexity Matrix

❖ Prioritize & assign cases based on:

- ❖ 1) Impact to human health & the environment
- ❖ 2) Resources required for investigation & referral

❖ “Stage Gate” Process

- ❖ Rate case at outset when deciding whether to investigate
- ❖ Re-rate following completion of investigation “milestones”
- ❖ Modify resource allocation or close cases as necessary



Improvement Techniques (cont.)

❖ “Case Traveler” Documentation

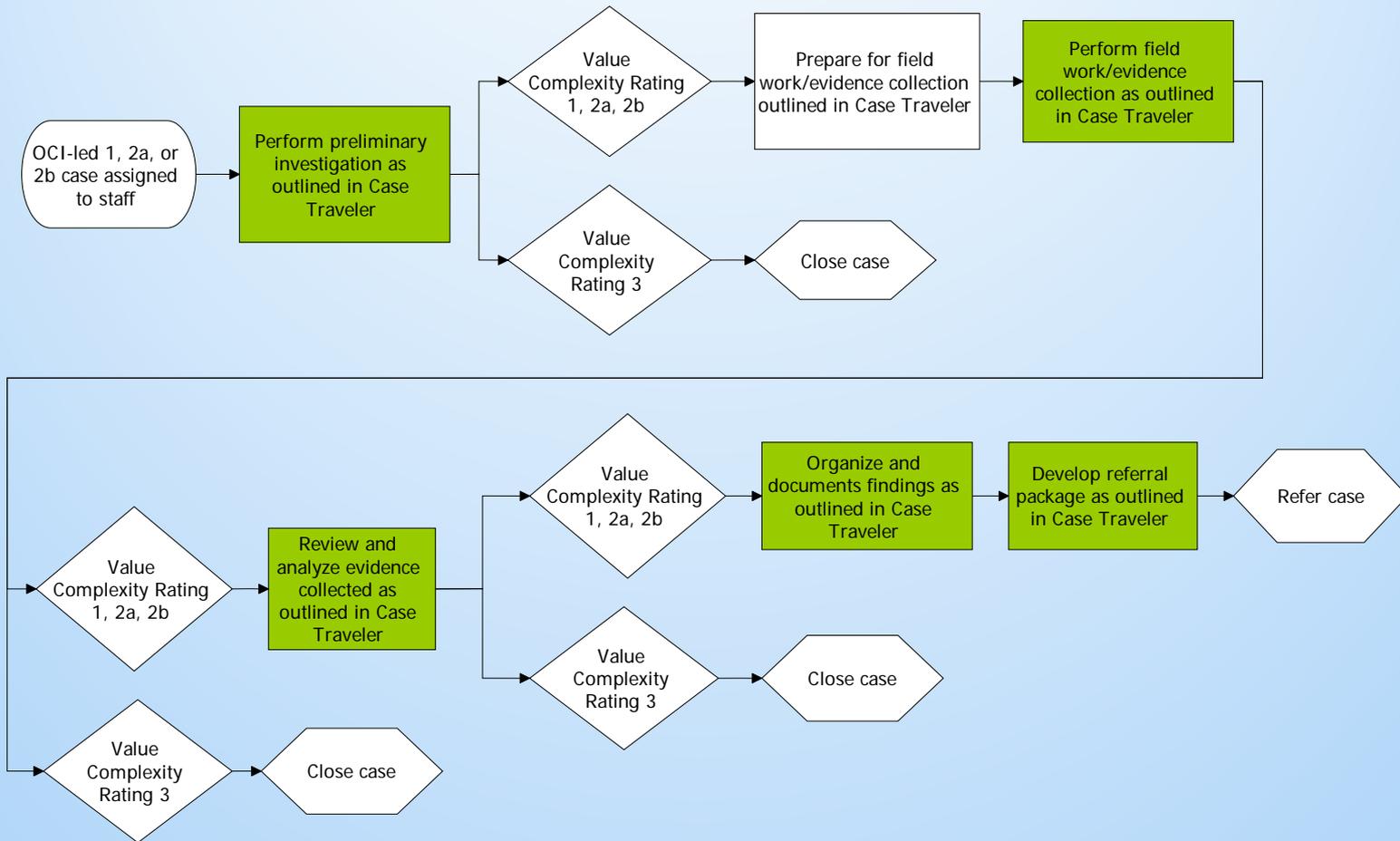
- ❖ Outline deliverables and deadlines for each step of the investigation and referral process

| OFFICE OF CRIMINAL INVESTIGATIONS CIVIL AND ADMINISTRATIVE CASE TRAVELER | | | | | |
|--|--------------------------------|-----------|---|--|-----------------|
| The steps taken to complete the investigation and referral for OCI case number _____ should include: | | | | | |
| Stage | | Due Dates | | | Completion Date |
| 1 | Preliminary investigation | | | | |
| 2a | Prepare for field work | | | | |
| 2b | Perform field work | | | | |
| 2c | Perform post-field work | | | | |
| 3 | Review and analyze evidence | | | | |
| 4 | Organize and document findings | | | | |
| 5 | Develop referral package | | | | |
| Stage | 1 | 2a-c | 3 | | |
| Case Value (1-10) | | | | | |
| Case Complexity (1-10) | | | | | |
| Rating (1, 2a, 2b) | | | | | |
| Estimated Referral Date | | | | | |

| OFFICE OF CRIMINAL INVESTIGATIONS CIVIL AND ADMINISTRATIVE CASE TRAVELER | | | |
|---|--|----------|-----------------|
| <u>PREPARE FOR AND PERFORM FIELD WORK AND POST-FIELD WORK</u> | | | |
| The steps taken to prepare for and perform field work and post-field work for OCI case number _____ should include: | | | |
| Include (Y/N) | | Due Date | Completion Date |
| Prepare for field work | | | |
| | Prepare inspection warrant | | |
| | ___ Write inspection warrant | | |
| | ___ Review by OLC | | |
| | ___ Review by supervisor | | |
| | Prepare health & safety forms | | |
| | ___ Prepare pre-HARP | | |
| | ___ Submit to IH for review & signature | | |
| | ___ Prepare and submit post-HARP | | |
| | Develop sampling plan | | |
| | Submit web-ARF | | |
| | Coordinate staff availability and travel | | |
| | Prepare sampling supplies and vehicles | | |
| | Review site plan with supervisor | | |
| | Hold pre-site visit briefing | | |
| Include (Y/N) | | Due Date | Completion Date |
| Perform field work | | | |
| | Travel to site | | |
| | Site safety meeting | | |
| | Perform inspection warrant | | |
| | Perform inspection | | |
| | Perform sampling event | | |

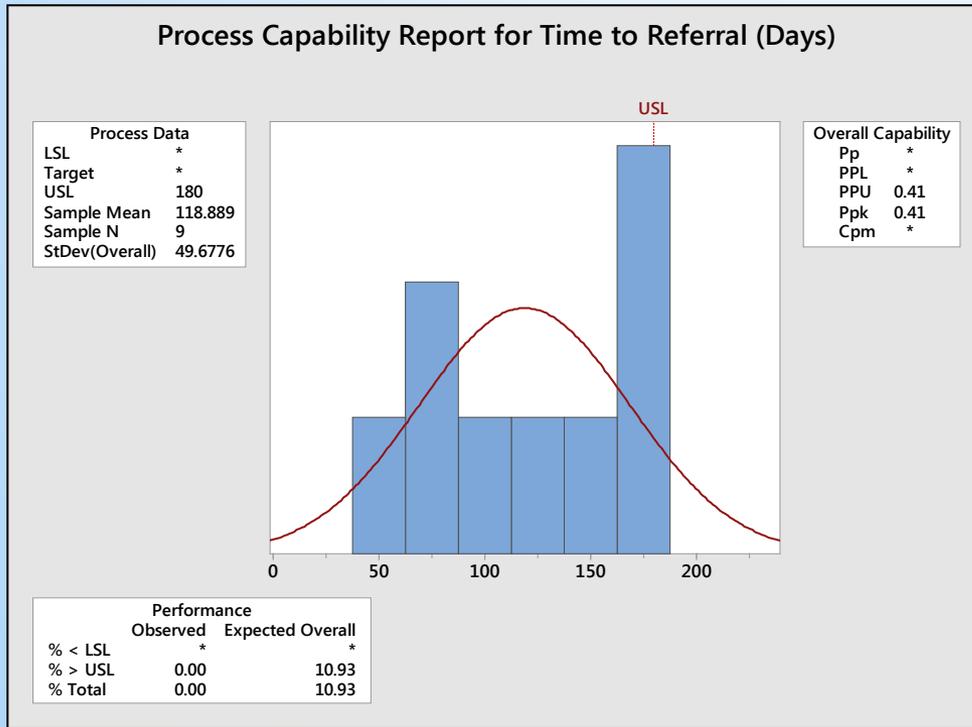


New Process Map



- ❖ New process map includes three “Stage Gates” to minimize wait time and NVA processing

New Capability Analysis



| Test Case | Value | Complexity | Matrix Rating | Days to Referral (Before) | Days to Referral (After) |
|-----------|-------|------------|---------------|---------------------------|--------------------------|
| 1 | 5 | 7 | 3 | 784 | – |
| 2 | 6 | 7 | 2b | 670 | 139 |
| 3 | 5 | 5 | 2a | 231 | 72 |
| 4 | 10 | 10 | 2b | 503 | 167 |
| 5 | 6 | 3 | 1 | 533 | 39 |
| 6 | 6 | 5 | 1 | 420 | 97 |
| 7 | 5 | 7 | 3 | 1016 | – |
| 8 | 4 | 6 | 3 | 859 | – |
| 9 | 6 | 4 | 1 | 530 | 78 |
| 10 | 6 | 9 | 2b | 557 | 176 |
| 11 | 4 | 3 | 2a | 1068 | 173 |
| 12 | 6 | 7 | 2b | 316 | 129 |

- ❖ Current average – 119 days; Current maximum – 176 days
- ❖ Percent within goal – 89%

Control Plan

❖ Statistical Process Controls

❖ I charts:

- ❖ Time to referral
- ❖ Total referrals per quarter/year

❖ P charts:

- ❖ Cases accepted for prosecution

❖ Case traveler training for staff

❖ Monthly/quarterly audits

- ❖ Standardized Daily Log codes to facilitate audits



Additional Benefits

- ❖ Provide prosecutors with enhanced options regarding charges; cases are referred prior to misdemeanor statute of limitations
- ❖ Increased number of cases referred annually
- ❖ Focus OCI's resources on high priority, high value cases
- ❖ More equitable distribution of staff case loads
- ❖ Improves staff and supervisor's ability to gauge resource availability for other, non-OCI led work
- ❖ Ability to perform additional Lean Six Sigma projects in OCI and EERD



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